US MARINE CORPS TANKS OF WORLD WAR II

STEVEN J. ZALOGA ILLUSTRATED BY RICHARD CHASEMORE

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NEW VANGUARD • 186

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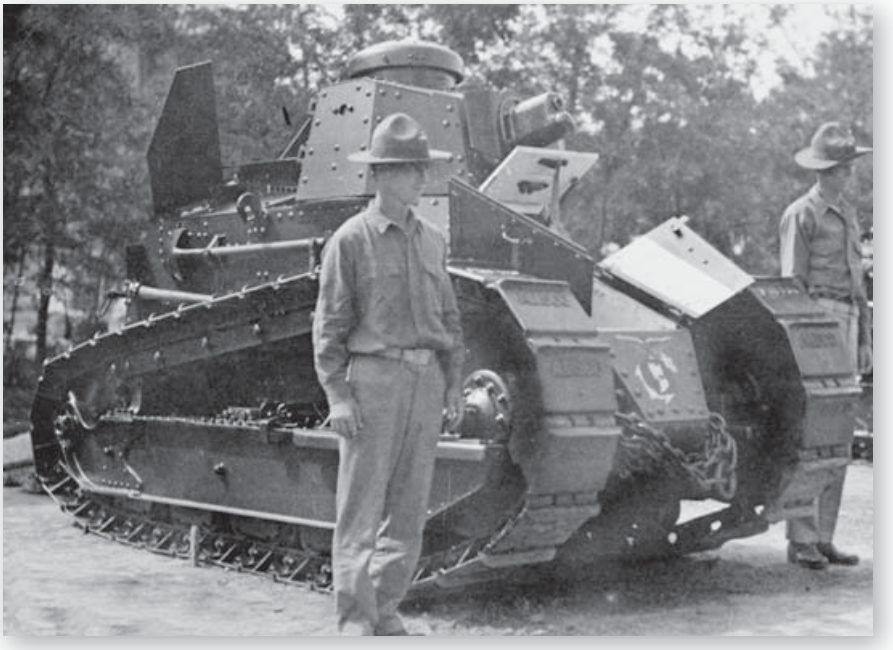
US MARINE CORPS TANKS OF WORLD WAR II

INTRODUCTION

Marine tank operations in the Pacific during World War II had none of the drama of tank campaigns in Europe. There were no great tank-vs.-tank battles like Kursk, Normandy, or the Ardennes; there were no great sweeping blitzkrieg advances. Instead, Marine tanks were used in brutal close quarter battles supporting the Marine riflemen from the muddy jungles of the Southwest Pacific to the coral and volcanic islands and atolls of the Central Pacific. Through 1942–43 they were a relatively minor supporting arm, but by 1944 they emerged as an essential element of modern close combat tactics. The tank battalions were not the star actors of the campaigns, but played a critical supporting role for the Marine riflemen. The Pacific battles were still determined by aggressive infantry assault and tenacious infantry defense, but the fire-support and protection offered by tanks gave the US Marines a decisive offensive advantage against their hard-pressed Japanese adversaries. Had the war continued on to the Japanese Home Islands in the fall of 1945, tanks no doubt would have played an increasingly vital role in the assault.



The Marine Expeditionary Force's Tank Platoon at Quantico, Virginia was equipped with the Six Ton Tank Model 1917, a license-built copy of the French World War I Renault FT. The platoon was deployed to Tientsin, China in 1927 to serve with the garrison there. (NARA)

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EARLY MARINE ARMOR

The US Marine Corps obtained its first armored vehicles in 1916 when the Advanced Base Force, Philadelphia, purchased armored cars from the Armor Motor Car Company (AMC). These were a commercial design based on the King 1917 touring automobile. Eight were purchased in total and they served in Armored Car Squadron, First Regiment. Although the unit was disbanded in 1921, five of the cars were deployed overseas in Haiti with the 2nd Marines for patrol duty. They returned in 1927 in run-down condition and were put in storage.

The Marine Corps had noted the Army use of Renault FT tanks in World War I and an experimental light tank platoon was formed in 1923 at Quantico, Virginia as part of the Marine Expeditionary Force. It was originally equipped with three Six Ton Tanks Model 1917, the license-built American copy of the French Renault FT. Initial experiments were conducted with these tanks during the annual maneuvers at Culebra Island in 1924. Curiously enough, the maneuvers also involved the trials of a 75mm gun Amphibian Tank on loan from J. Walter Christie's company. Although the Marines did not have the funds or the interest to acquire the Christie Amphibian Tank, the maneuvers had been successful enough that in 1925 the Marines requested additional Six Ton Tanks from the Army, eventually receiving eight. The Tank Platoon received its first assignment in 1927 when Gen. Smedley Butler, in command of the Marine Expeditionary Force at Tientsin outside Beijing, requested armored cars to assist in the patrol duties in China. Since the AMC armored cars were in such poor repair, the Tank Platoon with five Six Ton Tanks was sent to China in April 1927. After an uneventful deployment, the platoon returned to the US in late 1928 and was disbanded in November due to budget cuts.

By the early 1930s the Marine Corps began to focus on the mission of conducting forcible entry against defended beaches. There was considerable

The Marmon-Herrington CTL-3 was the first tank built to Marine specifications. This shows one of the tanks that was tested by the Army at Aberdeen Proving Ground; it lacks the usual three .30 cal machine guns mounted in the front ball sockets. It did not prove durable enough in service and most were rebuilt to the CTL-3M standards in 1941, which only marginally improved their utility. (Patton Museum)

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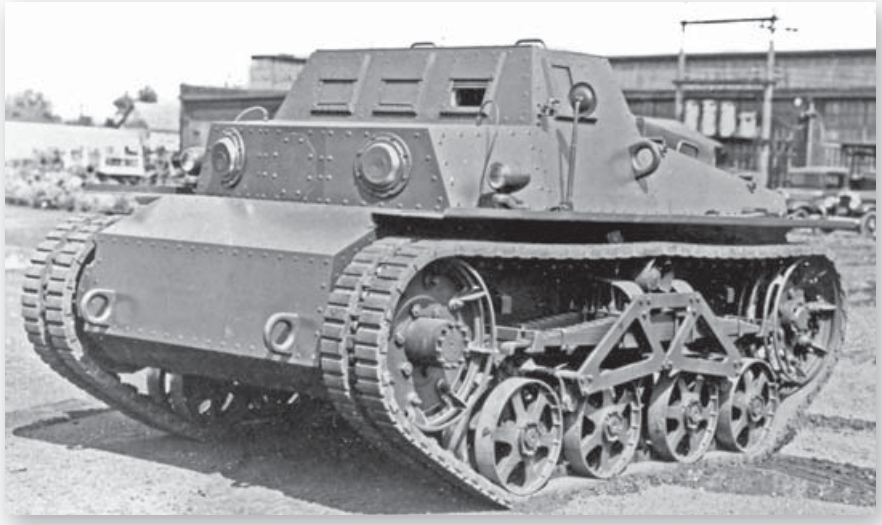

The CTL-3 had numerous small defects and was followed by the CTL-3A, which had an upgraded suspension that can be distinguished by the reinforced frame on the suspension. (Patton Museum)

interest in acquiring a modern light tank that could assist in this mission by overcoming enemy machine-gun nests during the landing phase. The cargo booms on US Navy transport ships prevented the acquisition of standard US Army types, which were too heavy. Under its 1934 plan, Fleet Marine Force (FMF) planned to acquire a tank company for its 1st Brigade at Quantico on the Atlantic coast and more later as funds permitted. The requirement called for a 3-ton tank armed with a light gun and a few .30 cal machine guns, and armored enough to resist .50 cal heavy machine-gun fire. There was some skepticism about the feasibility of amphibious tanks like the Christie design tested in 1925, so instead the Marines planned to disembark the tanks from Navy lighters fitted with bow ramps. The 3-ton weight limit was unrealistic, and by the time the Marine Corps solicited bids from industry in 1935, the weight had climbed to 4.75 tons. The most serious bid came from the Marmon-Herrington Company, a truck manufacturer that had developed the CTL-1 (Combat Tank Light) for a Persian Army requirement. This had been followed by the CTL-2 with thicker armor, and Marmon-Herrington offered its new CTL-3 for the Marine requirement. The initial batch of five CTL-3s was delivered to Quantico in February 1937 and the Tank Company, 1st Marine Brigade, took part in Fleet Exercise 4 (FLEX-4) at Culebra Island that year. The CTL-3 proved to be a disappointment because its light weight and small size had led to too many compromises, including a fragile power train and weak armor. In September 1937, the Marines ordered a modestly improved version – the CTL-3A with a new Hercules engine and a reinforced suspension – for a second tank platoon, and they were delivered in June 1939.

Marine officers familiar with the fragile little CTL-3s were becoming increasingly vocal about the need for a larger and more robust tank such as the contemporary US Army light tanks. They pointed out that newer Navy ships had booms that could accommodate tanks well over the 5-ton limit. In April 1939 the Army drove an M2A2 light tank and M1 combat car from Aberdeen Proving Ground, Maryland, to Quantico, Virginia, and they clearly displayed their much greater robustness compared to the flimsy CTL-3. Trials with the CTL-3 in 1938 found that even .22 caliber rounds could cause bullet splash through the vision ports. The Marine 1st Tank Company took part in FLEX-6 in 1939 along with a single M2A4 light tank on loan from the Army. Some senior Marine officers still preferred the CTL-3 to the Army tanks since two

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Tank attack! The Tank Company, 1st Marine Brigade, takes part in exercises at Quantico, Virginia, on August 22, 1941 as a pair of CTL-3A tanks charge a pair of water-cooled .30 cal machine guns. (NARA)

CTL-3s could be carried on a Navy lighter instead of only one Army light tank. As a compromise, in April 1940 the Marine Corps decided to procure improved Marmon-Herrington tanks as well as the Army light tank. In the wake of the defeat of France in the summer of 1940, the Marine Corps requested the transfer of 36 M3 light tanks from the Army as soon as possible. Since this was not in production yet, the Marines received the M2A4 light tank instead. The initial deliveries of the M2A4 went to the 3rd Tank Company, 1st Brigade, in late 1940. By the end of that year the Marines planned to order 37 more Army light tanks along with 20 Marmon-Herrington CTL-6 light tanks and five turreted CTM-3TBD medium tanks. There were also plans to upgrade the older CTL-3 tanks to the CTL-3M configuration. As the Marine Corps expanded from two brigades to two divisions, each division would receive a mixed tank battalion with companies of M2A4 and Marmon-Herrington tanks.

The Marine Corps received only 36 M2A4 light tanks before the improved M3 light tank became available. Company A, 2nd Tank Battalion, received the M3 light tank when ordered to deploy to Iceland with the 1st Provisional Marine Brigade in July 1941. In the wake of the Pearl Harbor attack on December 7, 1941 and the US entry into war, B Company, 2nd Tank Battalion, became the first Marine tank unit deployed to the Pacific, dispatched to Samoa in early 1942 with the M3 light tank. By the time that the 1st and 2nd Tank Battalions had been fully activated in November–December 1941, the M3 light tank had become available. The rapid expansion of the Marine tank force led to the establishment of the Tank School, Fleet Marine Force Training center, Camp Elliott, California, better known as "Jacques' Farm."

The haste and chaos of the initial US Army tank program after the start of the war also embroiled the Marine Corps. The Army's Ordnance division was making rapid changes to the M3 light tank, largely in response to British experiences in the North African desert with lend-lease Stuart tanks. The Marines received a variety of M3 "high-tops," the Marine nickname for the initial M3 light tanks with the octagonal D38976 turret and round D39273 turret, so named because they had high commander's cupolas.[1] The Marines

[1] For further details on the M3 light tank issues, see: Steven Zaloga, *M3 & M5 Stuart Light Tank 1940–45*, New Vanguard 33, Osprey, Oxford (1999).

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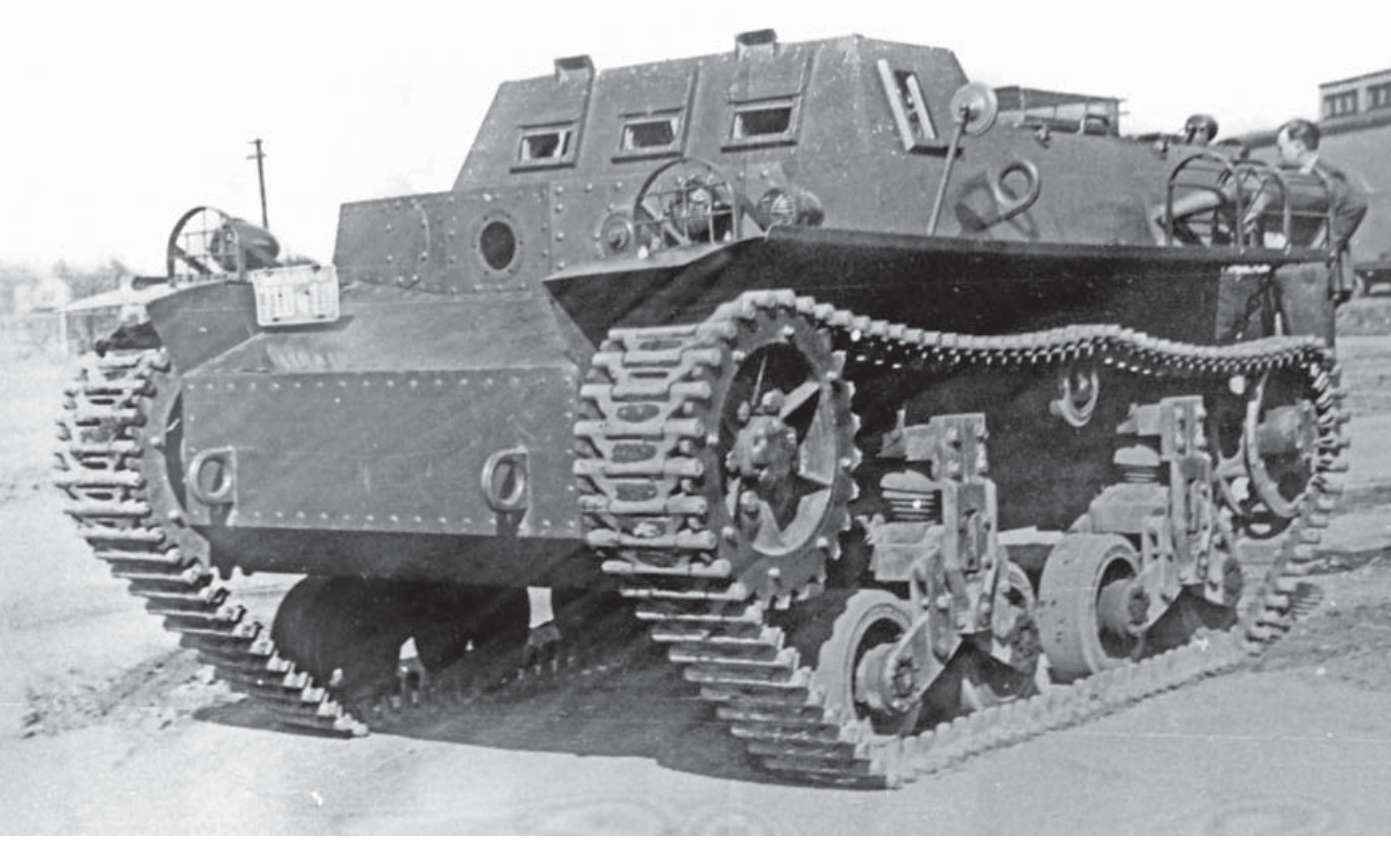

The ultimate version of the Marmon-Herrington light combat tank program for the Marine Corps was the CTL-6, which had a substantially more robust chassis. Twenty of these were built and they served with the 1st and 2nd Separate Tank Companies on Samoa during the early years of the war. (Patton Museum)

received both the diesel-powered and gasoline-powered versions. Ordnance was also developing the improved M3A1 light tank with a rotating turret basket, but before this entered production, an interim version emerged which had the "flat-top" D58101 round turret without the commander's cupola, but which lacked the turret basket and other features of the definitive M3A1. This version proved to be by far the most troublesome type of M3 light tank in Marine service due to the sloppy fire-control layout, which contained mixed and incompatible elements of both the M3 and M3A1 design. As of February 1942 the Marine Corps had 367 M3 light tanks on order,

A

1: M2A4 LIGHT TANK, MARINE 1ST TANK BATTALION, GUADALCANAL, 1942

The US Marine Corps obtained its tanks through US Army production contracts so they were delivered in standard US Army olive drab instead of Marine Corps dark green. The light tanks deployed on Guadalcanal had a band painted around the turret, apparently in yellow. The companies appear to have used geometric shapes (A=diamond, B=circle, C=square) but some tanks like this one used a simple letter and were probably from the headquarters.

2: M3A1 LIGHT TANK, TANK COMPANY, 4TH MARINES, EMIRAU ISLAND, BISMARCK ARCHIPELAGO, MARCH 1944

On occasion, the Marine tank battalions separated companies to support Marine regiments for specific missions. Company A, 3rd Marine Tank Battalion was originally broken off to serve with the 9th Marines, but was later attached to the newly reconstituted 4th Marines in 1944. This tank was originally from the 3rd Platoon, Company A, 3rd Tank Battalion. Some Marine tank battalions also used geometric symbols to distinguish their companies and this is an example on an M3A1 light tank during the landings on Emirau Island in 1944. With the expansion of the USMC during the war, a new marking system was introduced in 1944 called the UNIS (Unit Numerical Identification System) that was used on uniforms and equipment. It consisted of a three-digit number within a geometric symbol. The symbols were a square (2nd Division), diamond (3rd), semi-circle (4th), rectangle (5th), and circle (6th). An example of the UNIS system is seen here on the jerrycan carried by this tank. On some occasions, the tanks had this insignia painted on them as can be seen in some of the other plates.

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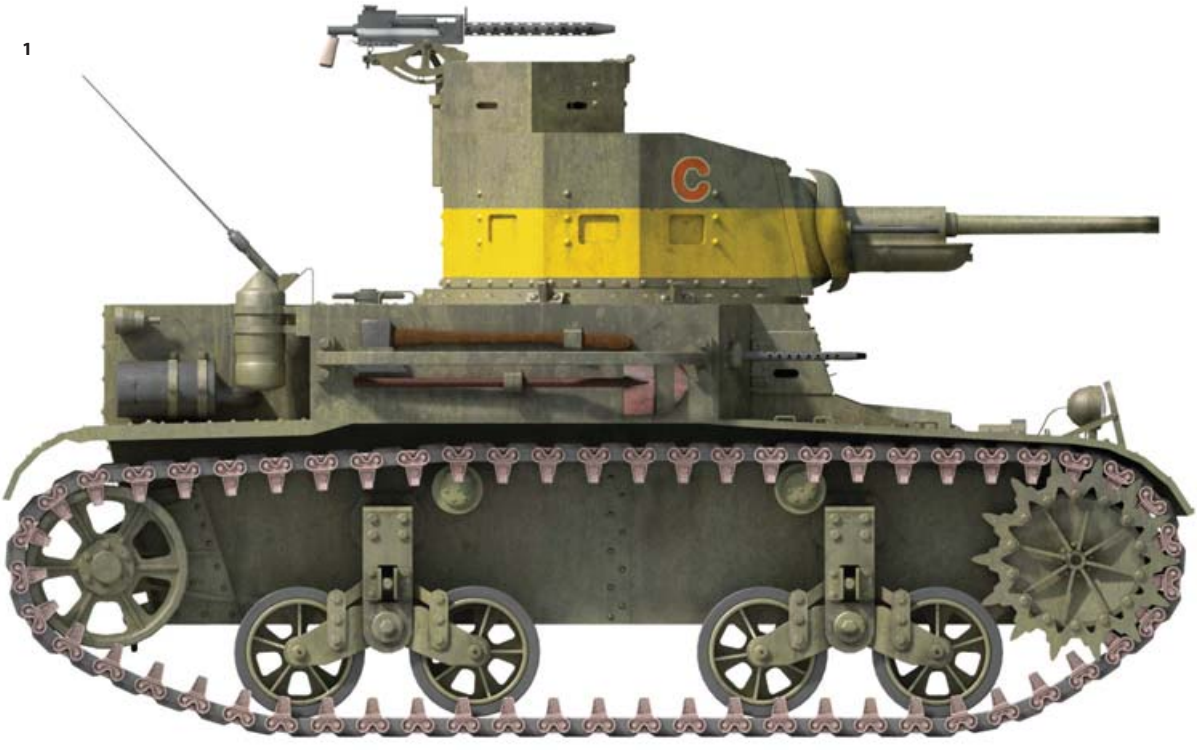

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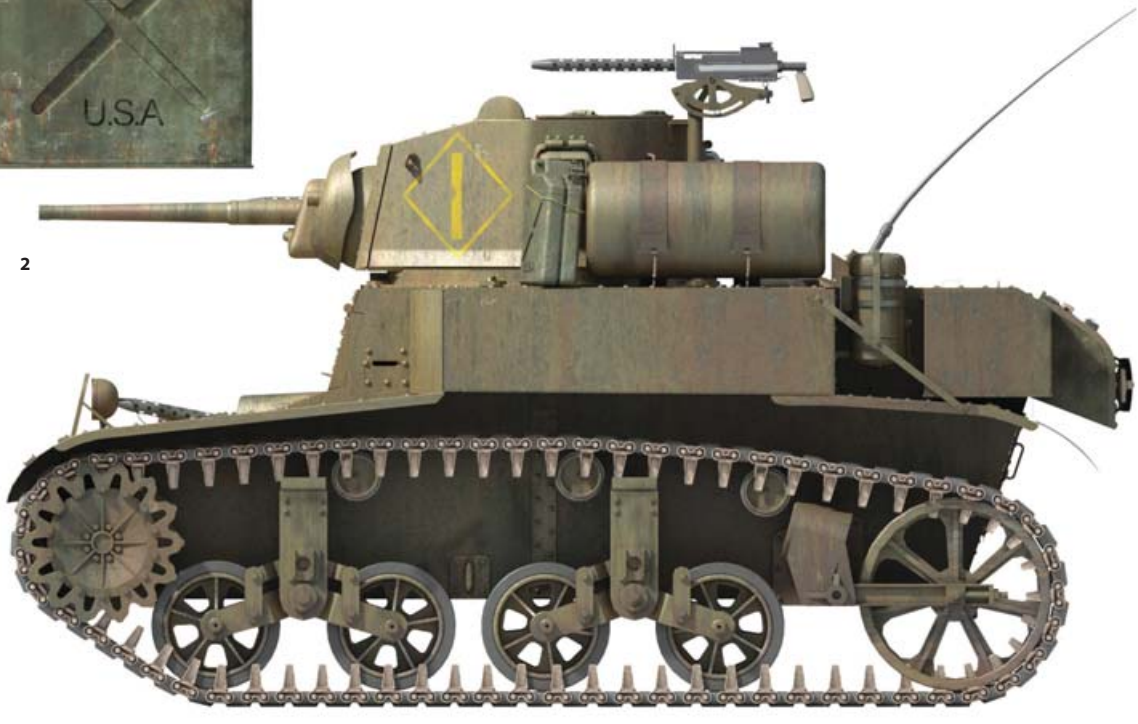

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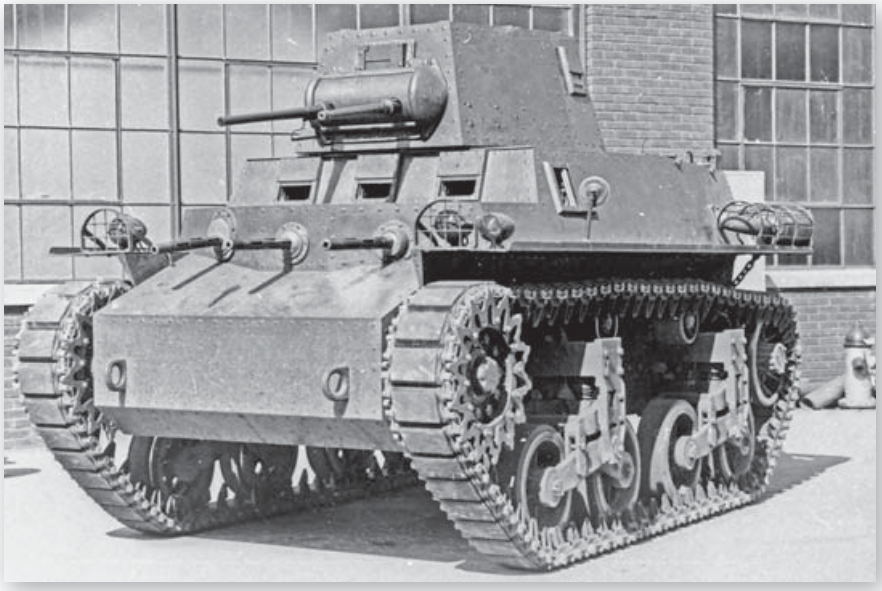

Marmon-Herrington built five of these turreted CTM-3TBD medium tanks, which were armed with a pair of .50 cal heavy machine guns in the turret as well as the hull machine guns. They proved mechanically fragile and weakly protected and were relegated to guard duty on Samoa. (Patton Museum)

With the outbreak of war with Japan on December 7, 1941, the US Marine Corps began deploying defense battalions to various islands and atolls in the Pacific. Some of these units eventually included tank platoons. This is an M3 "high-top" light tank with the D39273 round turret serving with the 16th Defense Battalion on Johnston Island in April 1943. The battalion created special revetments for the tanks complete with a folding overhead cover which served both for camouflage purposes and to shield the tank from the tropical sun. (NARA)

increasing to 735 by August of that year. By November the Marine Corps had 36 M2A4, 73 M3 (gasoline), 175 M3 (diesel), and 375 M3A1 (gasoline) light tanks equipping three tank battalions and the tank platoons of a number of defense battalions. The final batches of the Marine order were fulfilled with the newer M5A1 light tank after it entered production in late 1942.

In the wake of the extensive acquisition of M3 light tanks, the unsatisfactory Marmon-Herrington tanks faded from view. The newest CTL-6 and CTM-3TBD tanks initially were issued to the divisional battalions. They were so poorly received due to their numerous defects that they were orphaned to the 1st and 2nd Separate Tank Companies and exiled to Samoa for guard duty. The Japanese capture of Wake Island in December 1941 convinced the Marines of the need to deploy more adequate defense forces with the Marine defense battalions on many small islands in the Pacific. As a result, light tank platoons were allotted to the defense battalions as they became available in 1942.

INTO COMBAT

The first combat use of Marine armor was during Operation *Shoestring* in the Solomons. In August 1942, Companies A and B, 1st Tank Battalion landed on Guadalcanal with its M2A4 and M3 light tanks, along with Company C, 2nd Tank Battalion on Tulagi. They were used to support Marine attacks against Japanese defenses. Guadalcanal was covered with thick tropical forests, which severely limited tank employment. Most actions involved a few tanks supporting Marines by routing out Japanese bunkers, and breaking up Japanese infantry counterattacks with machine-gun and canister fire. The Marines had not yet developed any doctrine

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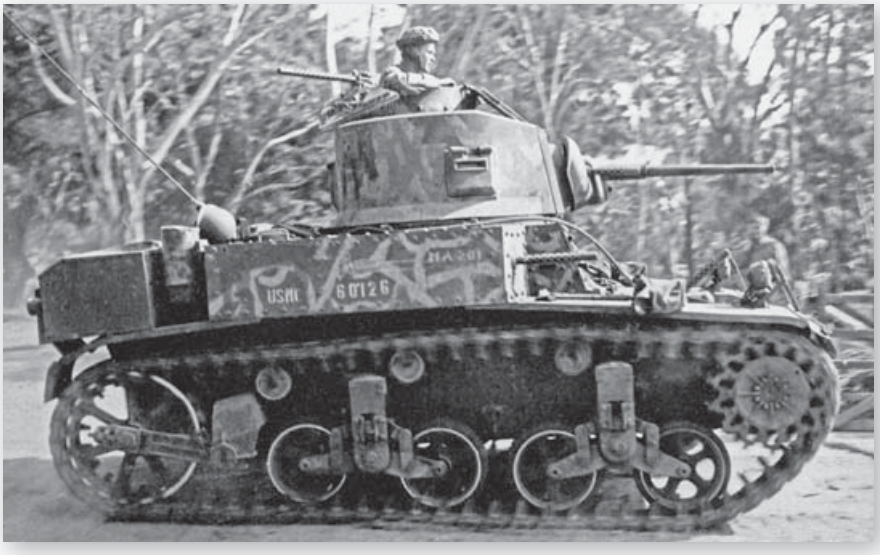
The combat debut of the Marine tank units was in the Solomons in the summer of 1942. On Guadalcanal in August 1942, an M2A4 light tank of Company A, 1st Tank Battalion leads the column followed by a pair of M3 high-top light tanks with the D39273 round turret.

for combined infantry-tank combat, and at this stage of the war tactics were improvised on the spot. The Japanese infantry was very poorly equipped with antitank weapons, and resorted to heroic but suicidal close-range attacks on the tanks using improvised means such as satchel charges. The Marine light tanks tried to operate in pairs, with one tank spraying the other with machine-gun fire to ward off the Japanese infantry. The brutal close quarter fighting was so savage that Gen. Alexander Vandergrift recalled the blood-splashed tanks "looking like meat-grinders."

In July 1943 the US Army and Marines began Operation *Backhander* on New Georgia, capturing Munda airfield with the support of a Marine light tank platoon from the 9th Defense Battalion. The tank platoon of the 10th Defense Battalion arrived on July 25, and the tank platoon of the 11th Defense Battalion on August 3. The three platoons later supported the Army landings on Arundel Island in September 1943. The tank platoon of the 4th Defense Battalion was landed on Vella Lavella island to support



Without a doubt, the least popular Army tank adopted by the Marine Corps was the interim M3 light tank with the flat-top D58101 turret. This tank was intended as a transition to the improved M3A1 with a new turret with an internal basket, but the internal turret configuration was a hasty mess. This is an example with the 1st Tank Battalion on Guadalcanal in a locally improvised camouflage scheme. (NARA)

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The tank platoons of the defense battalions saw scattered combat action in the Southwest Pacific. Here a column of M3A1 light tanks of the 9th Defense Battalion advance near the Munda airfield on August 6, 1943 during the New Georgia fighting.

New Zealand forces, but saw no combat. Japanese infantry made extensive use of magnetic antitank mines during the New Georgia fighting and this would prompt the development of wooden and concrete armor by the Marines to prevent the attachment of these charges to the hull. This campaign also saw the first experiments with the addition of field telephones to the tanks to permit communication between the tank crew and the accompanying infantry. The fighting spread to Bougainville in November 1943, one of the longest campaigns in the Southwest Pacific fighting. M3A1 light tanks of the Marine 3rd Tank Battalion helped capture the airfield at Cape Torokina but were stymied by dense jungle and heavy rains.

Although the Marine tanks had proved useful in the initial fighting in the Southwest Pacific, the terrain did not favor tank use. Marine tank battalions would not develop into an important element of Marine tactics until late 1943 when the focus of Marine operations shifted to the more open terrain of the Central Pacific.

B

1: M4A2 MEDIUM TANK, COMPANY C, IMAC TANK BATTALION, TARAWA, NOVEMBER 1943

Only two tanks of this platoon, Cecilia and China Gal, were operational during the original landings at Tarawa, although some other damaged tanks were later made operational. The IMAC Tank Battalion used an elephant in the Marine colors of yellow and red as their insignia, a device later taken over by the 3rd Tank Battalion. These tanks were finished in overall olive drab, and the original US Army blue drab registration numbers were still evident on their hull sides.

2: M4A2 MEDIUM TANK, COMPANY C, 4TH TANK BATTALION, ROI-NAMUR, KWAJALEIN ATOLL, FEBRUARY 1944

Company C of the 4th Tank Battalion was the first Marine tank unit to widely use wooden side armor as a defense against Japanese magnetic antitank mines, and it saw its combat debut during the Kwajalein landings. King Kong was the tank of Lt. Max English, the 2nd platoon leader. While most tanks were in overall olive drab, English had a distinctive camouflage pattern applied to the turret of his tank so that it would be more easily recognizable in combat.

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MARINE MEDIUM TANKS

Early Marine tank acquisition had been tightly constrained by the limits of US Navy landing craft and transport ship booms. By 1942 the growing requirements for amphibious assault in both European and the Pacific theaters by the Army and the Marine Corps had led to a stunning growth in amphibious capability. The Marine Corps was well aware of the limitations of the 37mm gun on the M3 light tank, and had been paying close attention to the US Army's shift to medium tanks armed with a 75mm gun. In October 1942 the US Army agreed to transfer small numbers of M4A4 medium tanks to the Marine Corps, eventually totaling 22 tanks. The Marines quickly realized that the Army was manufacturing M4 medium tanks with several engines, the M4 and M4A1 with a Continental radial gasoline engine, the M4A2 with a GM twin diesel engine, the M4A3 with a Ford gasoline engine, and the M4A4 with a Chrysler A-57 multi-bank gasoline engine. After some experience with the M4A4, the recommendation was to acquire the M4A3, M4A1, and M4A4 in that order. However, lend-lease shipments to Britain and the Soviet Union were already well established, and at a November 1943 meeting in Washington the Marines were informed that they would have to accept the diesel-powered M4A2 if they wanted prompt deliveries for their requirement for 168 medium tanks for two medium tank battalions in 1943. The resulting delivery of the M4A2 to the Marine battalions was greeted with mixed feelings in the Marine tanker community, with some Marines describing the type as "a stinker" while many Marine tankers later warmed to the diesel engines due to their excellent torque at low speeds, which provided good mobility in the wretched field conditions. In late 1943 the Marines intended to equip the divisional tank battalions with light tanks, but to deploy two new medium tank battalions at corps level with the I and II Marine Amphibious Corps.

The jungle terrain of the Southwest Pacific conforms to most popular stereotypes of warfare in the Pacific. But aside from some concluding

Colorado, an M4A2 of the 3rd Platoon, C Company, IMAC Tank Battalion is seen on Tarawa a few days after the end of the fighting with a couple of M3A1 light tanks of the 2nd Marine Tank Battalion evident behind. (NARA)

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Operation *Backhander* on New Britain was the only time that the US Marines used the M4A1 medium tank in combat. These tanks came from US Army theater stocks and were not a normal type in the Marine arsenal. This is an M4A1 of Company A, 1st Tank Battalion was coming ashore during the Cape Gloucester landings in December 1943 from a Landing Ship, Tank (LST). (NARA)

operations in the Solomons in early 1944, the focus of Marine operations in late 1943 shifted to the islands of the Central Pacific. Tropical jungles and mud gave way to coral reefs and volcanic islands with hard surfaces that permitted a wider use of tanks. The first and bloodiest of these battles, Tarawa, took place on the wretched coral atolls in the Gilbert Islands starting on November 20, 1943. This was the first use of Marine medium tanks, the new M4A2 tanks of the I Marine Amphibious Corps (IMAC) Tank Battalion, and the first operation where the Marine tanks were obliged to disembark from their landing craft in the face of hostile fire. The tanks assigned to support the 2nd Marine Division landings were the M4A2 medium tanks Company C of the IMAC Tank Battalion followed by M3A1 Light tanks of Companies B and C, 2nd Tank Battalion.

The initial tank landings on Beach Red I were six M4A2 medium tanks that were dropped 1,200 yards offshore. As they approached the beach, the tank drivers saw a thick carpet of wounded and dead Marines in front of them. To avoid running them over, the tanks tried to move to the flanks of the landing area, only to fall victim to Japanese artillery or to drown in huge shell holes created by the pre-invasion bombardment. The tanks had not been adequately waterproofed and so engines became flooded and stalled. Only two tanks made it to shore. Chicago was knocked out, and China Gal's turret ring was jammed by a hit from a Japanese Type 95 light tank. With its gun inoperable, China Gal rammed the smaller Japanese tank, putting it out of action. Eight more M4A2 medium tanks from 2nd and 3rd platoons were dropped off Beach Red-3, losing one of their number in a shell hole. The four M4A2 medium tanks of 3rd Platoon were all knocked out, mainly by an entrenched Japanese gun emplacement. Of the three tanks that reached the shore intact, one was knocked out by a Japanese infantryman with a magnetic mine and another became bogged in a shell hole. Colorado returned to the battle after an onboard fire was quenched by driving into the sea. By the end of D+1, there were only four medium tanks in action. No M3A1 light tanks got ashore on D-Day, as four LCMs carrying tanks of 2nd Platoon, Company C, 2nd Marine Tank Battalion were sunk off the beach. The first M3A1 light tanks arrived on D+1 but one was lost to a magnetic mine. The

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The Marines examined some specialized Army equipment for potential use in amphibious landings during trials by the 3rd Tank Battalion at Guadalcanal in May 1944 prior to the Marianas campaign. This T34 "Calliope" launcher for 4.5-inch artillery rockets is seen mounted on an M4A2 named Dixie, while in front of it on the LCT is an M4A2 named Detour fitted with a T40 Whiz-Bang 7.2-inch demolition rocket launcher. In the event, neither type was inducted into Marine service.

other two platoons landed all 12 of their M3A1s successfully on D+2. The 37mm gun of the M3A1 was ineffective against Japanese bunkers, forcing Marine tankers to drive right up to the bunker embrasure and fire high explosive rounds directly into the gun-slits. The tiny atoll of Tarawa was taken in three days of fighting at a horrible cost.

The lessons of Tarawa would strongly affect Marine tank policy over the next year. The standard equipment of the USMC tank battalions, the M3A1 light tank, was shown to be inadequate, but the M4A2 medium tank had proven far more valuable. Waterproofing tanks was essential for amphibious landings since there was no certainty that the landing craft could deposit the tanks in shallow water and they might have to wade to shore through deep water. Japanese magnetic antitank mines were a growing threat. Japanese bunkers were a principal tactical objective, and gunfire was not adequate; tank-mounted flamethrowers were a potential response.

The last major Marine tank action in the Southwest Pacific took place in December 1943–January 1944 when the Marine 1st Tank Battalion was assigned to support the landings on Cape Gloucester. The battalion returned to Australia from its actions on Guadalcanal and A Company gave up its worn-out M2A4 light tanks for some Army M4A1 medium tanks for the landings. The terrain on Cape Gloucester was so sodden and overgrown that some of its tanks were loaded on to LCM landing craft and used as miniature battleships to blast Japanese bunkers while cruising offshore. The battalion's two remaining light tank companies received new Army M5A1 tanks, but the subsequent fighting on Cape Gloucester provided further evidence of the unsuitability of light tanks in tropical jungle terrain. Company B, 1st Marine Tank Battalion later supported Army landings on Arawe in January 1944, and the M4A1 tanks of Company A saw limited use during the landings at Hollandia in late April 1944. This was the last major use of Marine tanks in the Southwest Pacific with the US Army largely taking over this theater and the Marines concentrating on the Central Pacific theater.

OPERATION *FLINTLOCK*: THE MARSHALL ISLANDS

The next objective for US amphibious assault in February 1944 was Kwajalein, the largest atoll in the world, more than 60 miles long, with a lagoon 20 miles wide. Although there was some fear that Kwajalein would turn into another bloody battle like Tarawa, the Japanese garrison was more scattered and not as well equipped. By this stage, the Marines had begun to improvise solutions to the problems encountered at Tarawa and the other Pacific campaigns. The US Army had developed deep wading trunks and

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The disparity in tank quality between American and Japanese forces is nowhere more evident than in this view of Killer, the M4A2 tank of Sgt. Joe Bruno of C Company, 4th Tank Battalion following the fighting on Kwajalein atoll. The Type 94 light tank was one of the few Japanese armored vehicles on the island and this captured example was put on the engine deck of the Marine tank to take back to Hawaii as a souvenir. Killer shows several of the features beginning to appear on Marine tanks including the oak timber anti-mine appliqué as well as the standardized deep wading trunk adapter. (NARA)

waterproofing techniques at the Fifth Army Invasion Center (5AIC) in Algeria in preparation for the Operation *Husky* landings on Sicily in July 1943, and these formed the basis for local copies that were applied to Marine tanks for the Kwajalein landings. The threat of Japanese magnetic antitank mines prompted Company C, 4th Tank Battalion to come up with an antidote in the form of wooden planks applied to the side of their M4A2 medium tanks.

On February 1, 1944 the 4th Marine Division landed on the Roi-Namur Islands, while Army units attacked Kwajalein Island. A total of 10 M4A2 medium tanks of Company C and 3 M5A1 light tanks of Company A, 4th Marine Tank Battalion landed in support of the 23rd Marines at Roi, taking their objective in two hours. The 24th Marines landing at Namur were supported by ten M5A1 light tanks of Company B which were soon attacked

By the time of the Kwajalein fighting, the older M3A1 tanks were being replaced by the newer M5A1 light tank. This is Hunter, the tank of the B Company, 4th Tank Battalion commander, Capt. Jim Denig. This tank was knocked out during the fighting on Namur when swarmed by Japanese infantry; a grenade thrown into the tank killed most of the crew. The inadequate performance of the light tanks against Japanese bunkers and their limited firepower led to their retirement after the summer of 1944 in favor of medium tanks. (NARA)

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An M4A2 tank of the 2nd Separate Tank Company after the landing on Perry Island in the Marshalls in support of the 22nd Marines. The company had recently been reequipped with medium tanks after serving on Samoa with old Marmon-Herrington tanks. This shows one of the early and improvised styles of wading trunks. (NARA)

by swarming Japanese infantry. The tenacity of the Japanese defense of Namur led to a call for reinforcements. The tanks on Roi pooled their fuel, and four M4A2 medium tanks, Jenny Lee, Jezebel, Joker, and Juarez, crossed a sand spit to reinforce the light tanks. That night the medium tanks repulsed a furious Japanese counterattack. The only Japanese armor on the island were a few tankettes and several Type 2 Ka-mi amphibious tanks.

The next objective was Eniwetok, an atoll similar to Kwajalein. The 2nd Separate Tank Company that been stationed on Samoa with the obsolete Marmon-Herrington light tanks was reequipped with M4A2 medium tanks prior to the landing on February 18, 1944 to support the 22nd Marines on the outlying Engebi Island. The Army staged a separate landing on Eniwetok itself. On February 22, the 22nd Marines landed on nearby Parry Island, and the supporting M4A2 medium tanks made short work of the three Ha-go tanks encountered.

The fighting in the Marshalls made it very clear that the Japanese Army had neglected antitank defense in the two years since the heady victories in 1941–42 in the Philippines and Malaya. Their own tanks were hopelessly obsolete compared to the American M4A2 medium tank, and the standard 37mm antitank gun was nearly useless against American tanks. New tactics and new equipment were clearly needed to challenge the Marine tanks, but the losses at sea and in the air meant that there were already heavy demands on Japanese industry. The Japanese Army had waited too long to seek better antitank weapons, and now their demands were stalled behind higher priority claims for new aircraft and ships.

MARINE FLAMETHROWER TANKS

Japanese defenses in the Pacific frequently relied on the use of reinforced bunkers that were often impervious to 37mm or 75mm tank guns. The usual Marine tactic to deal with bunkers was the man-portable M1A1 flamethrower, but flamethrower crews were very vulnerable due to the weight of the equipment and the short range of the weapon. Attempts to mount the M1A1 flamethrower on tanks was undertaken by both the Marines and US

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A number of attempts were made to adapt the man-portable M1A1 flamethrower to tanks, and this is a demonstration of the configuration on a Marine M3A1 light tank on New Caledonia in October 1943. (NARA)

Army units in the Southwest Pacific in early 1943 after the experiences on Guadalcanal. One of the earliest Marine approaches was to fire the flamethrower out of the side pistol port of the M3A1 light tank turret. This was far from ideal, and attention turned to mounting it in the front hull of the M3A1 light tank in place of the bow machine gun. Such tank mountings also allowed two fuel units to be carried. The first Marine combat use of the flamethrower tanks was by Company B, 1st Tank Battalion while supporting the Army's 112th Cavalry on the Arawe peninsula using an M3A1 light tank with M1A1 flamethrower. A flamethrower tank attacked a Japanese bunker, but the fuel failed to ignite. The crewman had to open the front hatch and throw a thermite grenade at the bunker to ignite the fuel. The US Army units also used similar flamethrower tanks during the fighting along the Torokina river on Bougainville in February 1944, but the Army had adopted a technique of igniting the flamethrower using tracer ammunition.

Separate from the local improvisations in the Southwest Pacific, Marine and Army units in the Central Pacific attempted similar conversions. A special enlarged fuel tank was developed at the Honolulu Iron Works to increase the capacity of the flamethrower, and this was mounted on both amtracs and light tanks. The operations on Kwajalein in early 1944 saw the first attempted use of this system, but it was generally unsuccessful due to saltwater damage to the flame guns during the landings as well as problems with the ignition system. At least one flamethrower tank was used by the Marine 4th Tank Battalion during the fighting on Roi-Namur.

The inadequate performance of the improvised M1A1 flamethrower mountings prompted officers in the Central Pacific Theater to request information from Washington about any efforts to field a dedicated tank-mounted flamethrower. On learning of the new E4-5 auxiliary tank flamethrower, a request for 40 auxiliary flamethrowers were made by the Army. The US Army distinguished between two categories of tank-mounted flamethrowers, designating those used as secondary armament as "auxiliary" in contrast to those that replaced the main gun. The first shipment of E4-5 flamethrowers did not arrive in time for the Marianas campaign, but the first batch was mounted on six M4A2 tanks of the Marine 3rd Tank Battalion.

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The Canadian Ronson flamethrower was mounted in the turret of surplus M3A1 light tanks, renamed as Satan tanks in this role. As can be seen, this entailed removing the 37mm gun and replacing it with a stubby flame-gun mount. This is Defense (D-11) of the 4th Tank Battalion attacking a Japanese cave during the fighting in late July on Saipan. (NARA)

Besides the auxiliary flamethrowers designed as a supplementary weapon, the US Army had been examining larger flamethrowers that could be mounted in tank turrets in place of the main gun. About 40 Canadian Ronson F.U.L. Mk. IVs were shipped to the Central Pacific and after demonstrations in early 1944, were adapted to fit in obsolete Marine M3A1 light tanks by Army and Navy personnel in Hawaii. The resulting Satan flame tanks had many limitations, including the restriction in turret traverse to 180 degrees. Nevertheless, the 170-gallon capacity of the fuel tank and the better range of this system led to the conversion of 24 light tanks prior to the Marianas operation and these were deployed in special flamethrower companies in the 2nd and 4th Tank Battalions. Each company had 12 Satan flame tanks plus three new M5A1 light tanks to provide gunfire support.

THE MARIANAS: JUNE–JULY 1944

The Marianas were the first islands in Japan's inner defense belt to be attacked. Guam, Saipan, and Tinian were close enough to the Japanese Home Islands to serve as airbases for the new B-29 bombers. Due to this threat, the island's Japanese garrisons were reinforced by the 9th Tank Regiment with its 1st and 2nd Companies deployed on Guam, the 3rd, 5th, and 6th on Saipan. The first large-scale deployment of the new Type 1 47mm antitank gun was also made to the Marianas garrison. While this gun could not penetrate the frontal armor of the M4 medium tank at most ranges, it was effective against the side.

By the time of the Saipan landings on June 15, 1944, the Marine tank battalions had been reorganized, each with three medium tank companies with a total of 46 M4A2 medium tanks instead of the original 54 light tanks in the 1942 organization. The new Satan flamethrower tank companies were seldom deployed together, but rather their three platoons, each with four

C

M4A2 MEDIUM TANK, COMPANY B, MARINE 4TH TANK BATTALION, SAIPAN, JUNE 1944

Prior to the Saipan landings, the 2nd and 4th Marine Divisions agreed to use red and yellow fluorescent air identification panels respectively. The 4th Tank Battalion decided to paint the roofs of their tanks in yellow as a more durable method. Some tanks also had large numbers painted on the roofs, usually in black or black with red trim, and this probably indicated the Marine regiment to which the tanks were attached, in this case, the 23rd Marines. Fireball also shows the UNIS markings system in action, with the 4th Marine Division at this time assigning the unit the numbers 131 (HQ), 132 (Company A), 133 (Company B), 134 (Company C), and 135 (Company D).

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Even with deep wading trunks, the Marines often lost a few tanks during the initial amphibious landings. A common source of difficulty was deep craters created by the pre-invasion bombardment. This M4A2 of the 4th Tank Battalion with its distinctive yellow turret roof has become trapped in a shell hole and the crew is trying to restart the motor some days after the landing. (NARA)

Satan flame tanks and one M5A1 gun tank, were attached to the three medium tank companies for flame support. The Marine 2nd and 4th Tank Battalions were landed on Saipan on the afternoon of June 15. The usual practice was to assign one tank company to each of the Marine divisions' regiments to provided fire support against entrenched Japanese positions.

On the night of June 15, a Japanese SNLF raiding party (Special Naval Landing Force), supported by several Type 2 Ka-mi amphibious tanks, landed near Garapan on the left flank of the northern beaches. The Marines called in naval star shell illumination, and the Type 2s soon fell victim to Marine bazookas and tank guns. At dawn, a Japanese SNLF Type 95 Ha-go company and the 4th Company, 9th Tank Regiment attacked the beachhead with supporting infantry. They were devastated by tank fire from the two Marine battalions. The steady progress of the US forces on Saipan prompted Vice-Admiral Nagumo to order the Army garrison commander, Lt. Gen. Saito, to launch an all-out counterattack on the night of June 16–17. Spearheading the

The poverty of Japanese infantry antitank weapons led to the use of desperate close-assault tactics using satchel charges and mines. Although sometimes effective as in the case of this Marine M4A2 knocked out in a cane field on Saipan during the June 1944 fighting, it came at the price of high casualties among the Japanese infantry. (NARA)

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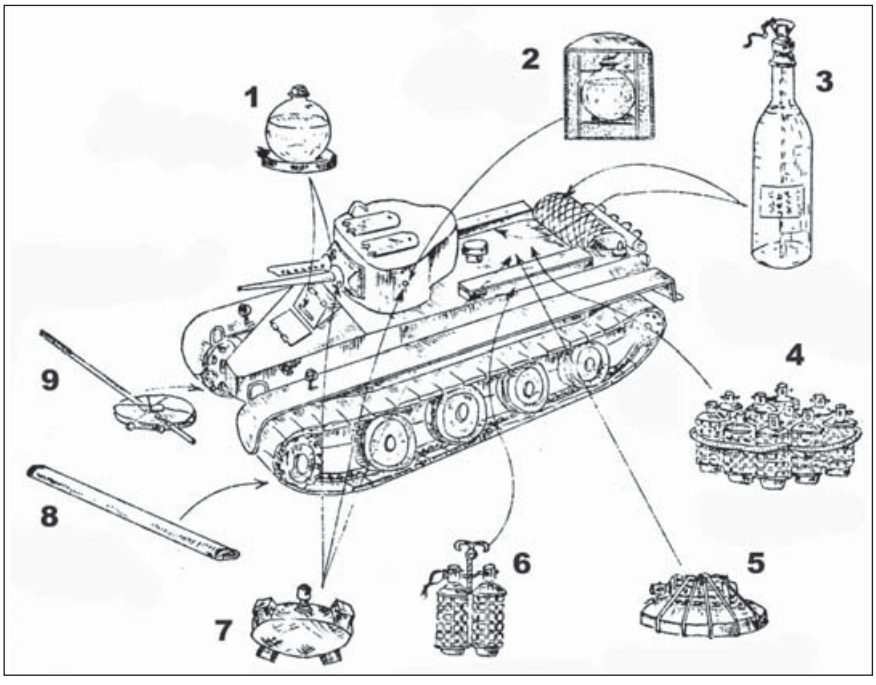
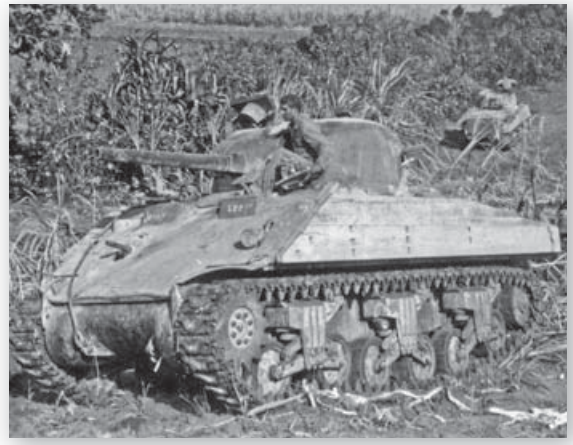


This illustration from a Japanese antitank tactics manual captured on Saipan shows the wide variety of explosive devices available to Japanese infantry, as well as their intended use. Absent from the illustration is the explosive satchel charge, a widely used weapon in the 1944–45 fighting. This manual was prepared by troops originally stationed in Manchuria facing the Soviet Union, so the tank type shown is a Soviet BT-5 rather than an American type. (1) Frangible smoke grenade (white), (2) Frangible gas grenade (hydrocyanic acid), (3) Molotov cocktail incendiary grenade, (4) Hand grenade cluster, (5) Type 93 antitank mine with grenade for detonation, (6) Hand grenades with attachment hooks, (7) Magnetic Antitank Mine Type 97, (8) Navy Antivehicle Yardstick Mine, (9) Type 93 antitank mine on thrusting pole.

attack were the 44 tanks of Col. Hideki Goto's 9th Tank Regiment. Marines could hear the Japanese tank engines while they were loaded with troops from the 136th Infantry Regiment in the town of Garapan. The Marines requested tank support and received an M4A2 platoon from A Company, 2nd Marine Tank Battalion and several M3 75mm SPM (self-propelled mounts) halftracks. The largest single Japanese tank attack of the Pacific war started at 0200 on the morning of June 17. The Japanese tank attack came across open ground, and naval star shells quickly illuminated the tanks. The Marines began firing at them with bazookas and 37mm antitank guns, knocking out several. In the confusion, several Japanese tanks strayed into nearby marshes and soon became trapped. Several tanks reached Marine lines but were quickly knocked out. As the attack was crushed in a hail of gunfire, the Marine tanks and SPMs began moving into the field, attacking any surviving tanks. Only 12 Japanese tanks managed to escape the slaughter. On June 24, many of these survivors were lost in an unequal duel with M4A2 medium tanks of Company C, 2nd Marine Tank Battalion near Garapan, and the rest were destroyed in scattered encounters with Army M5A1 light tanks.

The open terrain of the Central Pacific islands like Saipan encouraged the more widespread use of tanks by Marines. This is the M4A2 Jenny Lee of C Company, 4th Tank Battalion in a cane field overlooking Magician Bay on Saipan. The tank has the company's distinctive plank armor and a layer of concrete appliqué on the front glacis plate; on the commander's hatch, the periscope has an armored combing added on some tanks. (NARA)



Saipan was a complete change from previous Pacific campaigns, since the open terrain permitted freer use of tanks. But tank losses were quite heavy due to artillery and to hand-emplaced magnetic mines. Japanese mine teams soon learned that their weapons were especially effective if carefully placed on vulnerable points of the M4A2 medium tank, such as the sponson fuel tanks. At least three tanks had magnetic mines detonated over their sponson fuel tanks which sprayed fuel over the hot engines. To the relief of the crew, the diesel fuel did not ignite. The Marines soon learned that there had to be close

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The key to Marine tank tactics was close support between the tanks and the Marine riflemen, with the riflemen providing close protection of the tanks against Japanese infantry attack and the tanks providing their firepower and protection. This is King Kong, the M4A2 of Max English of Company C, 4th Tank Battalion, supporting a Marine rifle squad on Saipan on July 8, 1944. This shows the various improvements on the C Company tanks including the wooden side armor, the M3 light tank fuel drum used for carrying water for the accompanying riflemen, and the standard wading trunk adapter on the rear. The squad leader is talking to English over a field telephone attached to a box on the left rear plate while his radioman keeps in contact with the platoon HQ via the SCR-300 radio on his back. (NARA)

cooperation between the tanks and infantry to defeat these tactics. By now, the Marines had found that telephones mounted on the rear of the tanks were absolutely essential to coordinate their actions with the accompanying infantry. Marine commanders were generally ill-informed about the potential of the Satan flame tanks, but once they were demonstrated in the first few days of fighting, they were used with increasing frequency through the final stage of the fighting. Saipan was declared secure on July 9, 1944.

The new Satan flame tanks received poor marks. The flamethrower had poor reliability and inadequate range and the mounting in the cramped hull and small turret made it very difficult for the crew to operate the weapon. Coordination with accompanying units was poor due to radio problems caused by the inaccessible radio location in the right sponson, and electrical interference from the flamethrower ignition system. Although there was a widespread appreciation of the need for an effective flamethrower tank, the Satan was not the solution. In contrast, Saipan demonstrated the versatility and firepower of the M4A2 medium tank and there was universal appreciation for the switch from light to medium tanks in the Central Pacific.

On July 24, nearby Tinian was assaulted by Marines supported by the 4th Marine Tank Battalion. The Japanese staged a night counterattack by the Japanese 18th Infantry Regiment supported by Type 95 light tanks, but this attack was decimated. The following day, the Marine 2nd Tank Battalion landed with its parent division. The Japanese defenses on Tinian were quickly overwhelmed, but it did see the widespread use of the Japanese Type 1 47mm antitank gun, which would prove to be a prime nemesis of Marine tanks over the next year of fighting. Tinian was taken by early July.

An M4A2 medium tank followed by an M5A1 light tank heads a column from the 4th Tank Battalion during the fighting near the airport on Saipan on July 7, 1944. (NARA)

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The 3rd Marine Division assaulted Guam while the Tinian operation was taking place. This operation was supported by the separate tank companies attached to the 4th and 22nd Marines, as well as the Marine 3rd Tank Battalion. Japanese tank units on Guam included the 1st and 2nd Companies, 9th Tank Regiment (29 Type 97 Chi-ha medium tanks and Type 95 Ha-go light tanks), and the 24th Independent Tank Company (nine Ha-gos). Much of the Japanese tank force was expended in a rash counter-attack on the night of July 25–26. Five Ha-gos of the 1st Company, 9th Tank Regiment quickly attacked the Agat beachhead on 21 July, and all were destroyed by bazookas and the M4A2 medium tanks of the Tank Company, 4th Marines. The remaining five Ha-gos of the 1st Company attacked the 22nd Marines, and were knocked out by the Tank Company, 22nd Marines. The Japanese 24th Independent Tank Company was wiped out during reckless counterattacks against the same units. The remaining Japanese tanks of the 2nd Company of the 9th Tank Regiment were withdrawn north to Tarague, and they were gradually lost in a series of ferocious night attacks. The Marine 3rd Tank Battalion had the first batch of six E4-5

ABOVE LEFT
The crew of an M4A2 commanded by Sgt. Robert L. Bodish (lower right) of the 2nd Tank Battalion take a break at the end of the Saipan fighting in a cane field. The tankers are all wearing the standard US tanker helmet, based on a prewar football helmet. (NARA)

ABOVE RIGHT
An M4A2 of the Tank Company, 4th Marines advances through mountainous terrain on Guam in July 1944. This separate company saw its combat debut during the unopposed landings on Emirau on March 20, 1944 before being committed to the Guam fighting. (NARA)

LEFT
One of the most useful additions to the Marine tank arsenal in 1944 was the dozer tank, a standard M4A2 tank fitted with a special hydraulically operated dozer blade in front. This versatile vehicle was widely used for clearing roads, plowing over Japanese bunkers, and a variety of other tasks. Here, one from the company HQ of the Tank Company, 4th Marines named Blood-Guts II is seen pushing a smoldering Japanese Type 95 Ha-Go tank off a road on Guam. The tank carries the rhinoceros insignia of this company. (NARA)

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An M4A2 named El Toro of the 2nd Separate Tank Company on Guam sports plank side armor and shows the effect of two impacts on the side. The tank remained functional in spite of the hits. (NARA)

auxiliary flamethrowers mounted on M4A2 medium tanks in the hull machine-gun station and they were first used in combat at Asan Point on July 22, 1944, mainly against Japanese cave positions. These were more satisfactory than the Satans on Saipan. Another innovation on Guam was some of the first use of dozer tanks by the Marine tank battalions, which proved quite useful against the numerous Japanese defensive positions.

The Marianas campaign made it quite clear that tanks were invaluable in the Central Pacific fighting. The Marines concluded that further work was needed to improve tank-infantry cooperation and a variety of solutions were under way including the widespread attachment of field telephones at the rear of the tank to permit the accompanying riflemen to help the tank crews identify targets. Also, the Marines began to mount infantry SCR-300 radios in some tanks since the tank radios did not operate in the same frequency bands as the infantry radios. The 4th Tank Battalion had already fitted wood appliqué to the sides of their tanks and in some cases wood or concrete on the

The Marines took advantage of the more open terrain on Tinian to deploy their tank units. This is a new M4A2 with the improved hull and large driver hatches named Caesar (C-40) of C Company, 2nd Tank Battalion on August 1, 1944. (NARA)

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An M4A2 of C Company 1st Tank Battalion, carrying Marine riflemen forward from the beachhead on Peleliu during the fighting in September 1944. (NARA)

front glacis plate prior to the Saipan landings as an antidote to Japanese magnetic antitank mines. Although this had proven effective, the Japanese had quickly adapted and began placing mines or satchel charges on the vulnerable rear deck over the fuel tanks and over hull and turret hatches. A variety of solutions were developed to deal with these new threats and these would be in place by early 1945.

OPERATION *STALEMATE*: PELELIU, SEPTEMBER 1944

One of the most controversial Central Pacific campaigns was the decision to assault the Palau islands. Peleliu was another fortified crag grimly reminiscent of Tarawa but larger and more densely fortified. The 1st Marine Division landed on September 15, 1944. Every one of the first tanks that the Marine 1st Tank Battalion put ashore in the fourth wave was hit by Japanese gunfire. The most dramatic moment came that afternoon when the tank company of the Japanese 14th Infantry Division with about 15 Type 95 Ha-go light tanks charged across the island's airstrip in a vain attempt to push the Marines back into the sea. Given the Marines' firepower, this charge was suicidal. The Ha-gos had 55-gallon drums lashed to the sides and rears containing bunched-up Japanese infantry. The attack quickly melted under a barrage of fire from bazookas, .50 cal machine guns, 37mm antitank guns, 75mm SPMs, three M4A2 medium tanks, and naval gunfire. The Marine tankers were bewildered when their AP ammunition seemed to have no effect on the Ha-gos. In fact, it was penetrating on one side, and passing clear through the other. The gunners switched to high explosive, which blew the small tanks apart. The Marines later found it difficult to determine how many tanks had actually been used in the attack. The 1st Tank Battalion had a modest number of flamethrower tanks equipped with the E4-5 auxiliary flamethrower. However, the most effective flame weapon was the Navy Mark I (E14-7R2)

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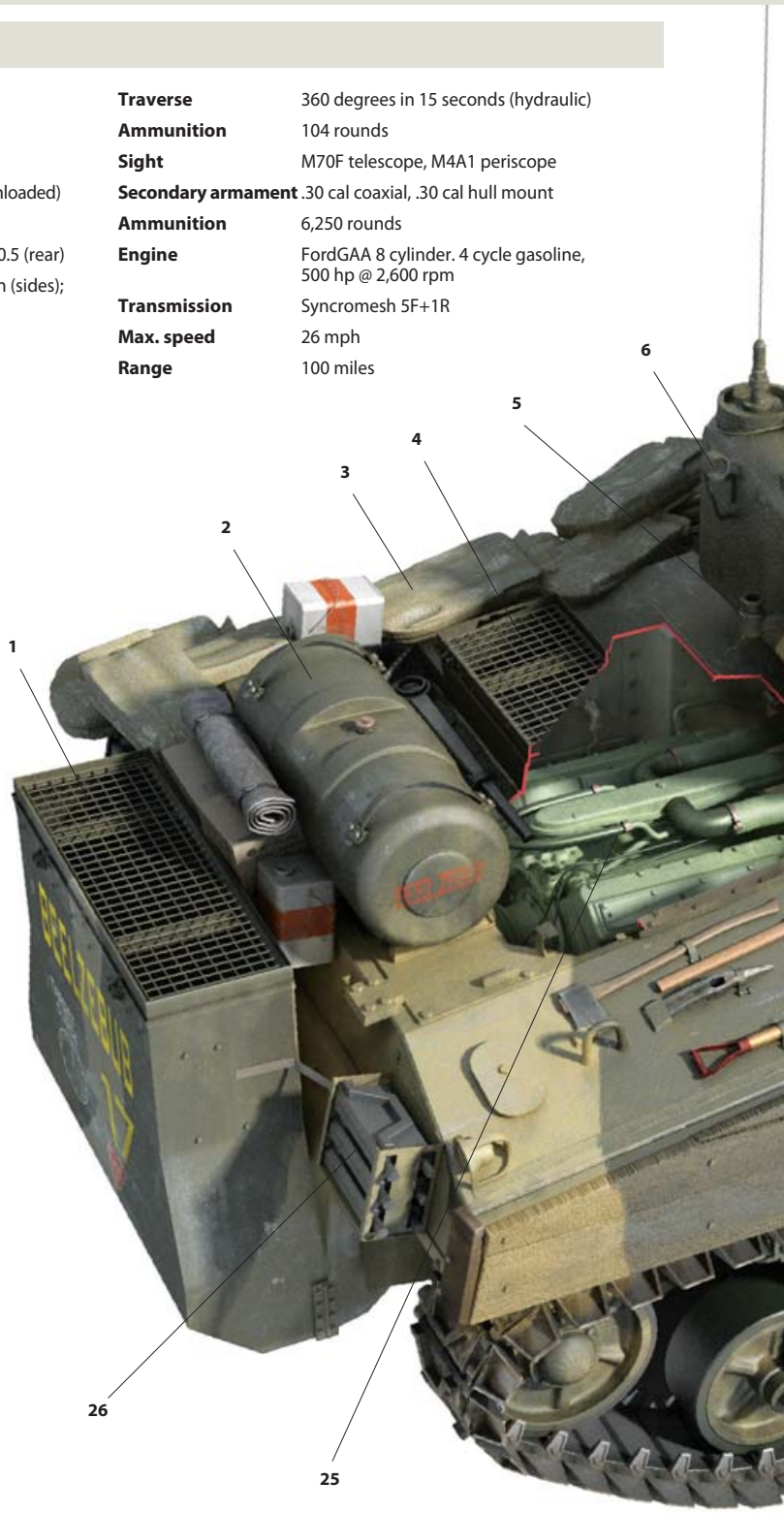
D M4A3 MEDIUM TANK, COMPANY B, MARINE 4TH TANK BATTALION, IWO JIMA, FEBRUARY 1945

Technical Data

Length	20.6 feet
Width	8.75 feet
Height	9.6 feet
Weight	34.8 tons combat loaded (31.5 tons unloaded)
Ground pressure	14.3 psi
Armor (hull)	2.5 in (front); 1.5 in (side); 1.0 (floor); 0.5 (rear)
Armor (turret)	3.5 in (gun shield); 3.0 in (front); 2.0 in (sides); 1.0 in (top)
Main gun	75mm M3 gun in M34A1 mount
Elevation	-10 to 25 degrees
Traverse	360 degrees in 15 seconds (hydraulic)
Ammunition	104 rounds
Sight	M70F telescope, M4A1 periscope
Secondary armament	.30 cal coaxial, .30 cal hull mount
Ammunition	6,250 rounds
Engine	FordGAA 8 cylinder. 4 cycle gasoline, 500 hp @ 2,600 rpm
Transmission	Syncromesh 5F+1R
Max. speed	26 mph
Range	100 miles

Key

1. Deep wading trunk lower stack
2. Water tank for accompanying infantry
3. Sand-bags to protect fuel tanks below
4. Adapter for engine air intake deep-wading stack
5. Pintle mount for .50 cal machine gun stowage
6. Barrel lock for .50 cal heavy machine gun stowage
7. "Bird-cage" protective cover over loader's hatch
8. Loader's periscope
9. 75mm main gun breech
10. Protective guard for 75mm gun
11. Turret ventilation cover
12. Gunner's telescopic sight
13. Gunner's periscopic sight
14. Track links for added protection
15. Gunner's controls
16. Transmission
17. Bow .30 cal machine gun
18. Extended end connectors on track
19. Wooden plank anti-magnetic mine protection
20. Concrete between wooden plans and tank hull
21. Bow gunner's seat
22. Tank commander's seat
23. Loader's seat
24. Fuel cap cover
25. Tank engine
26. Spare track stowage rack



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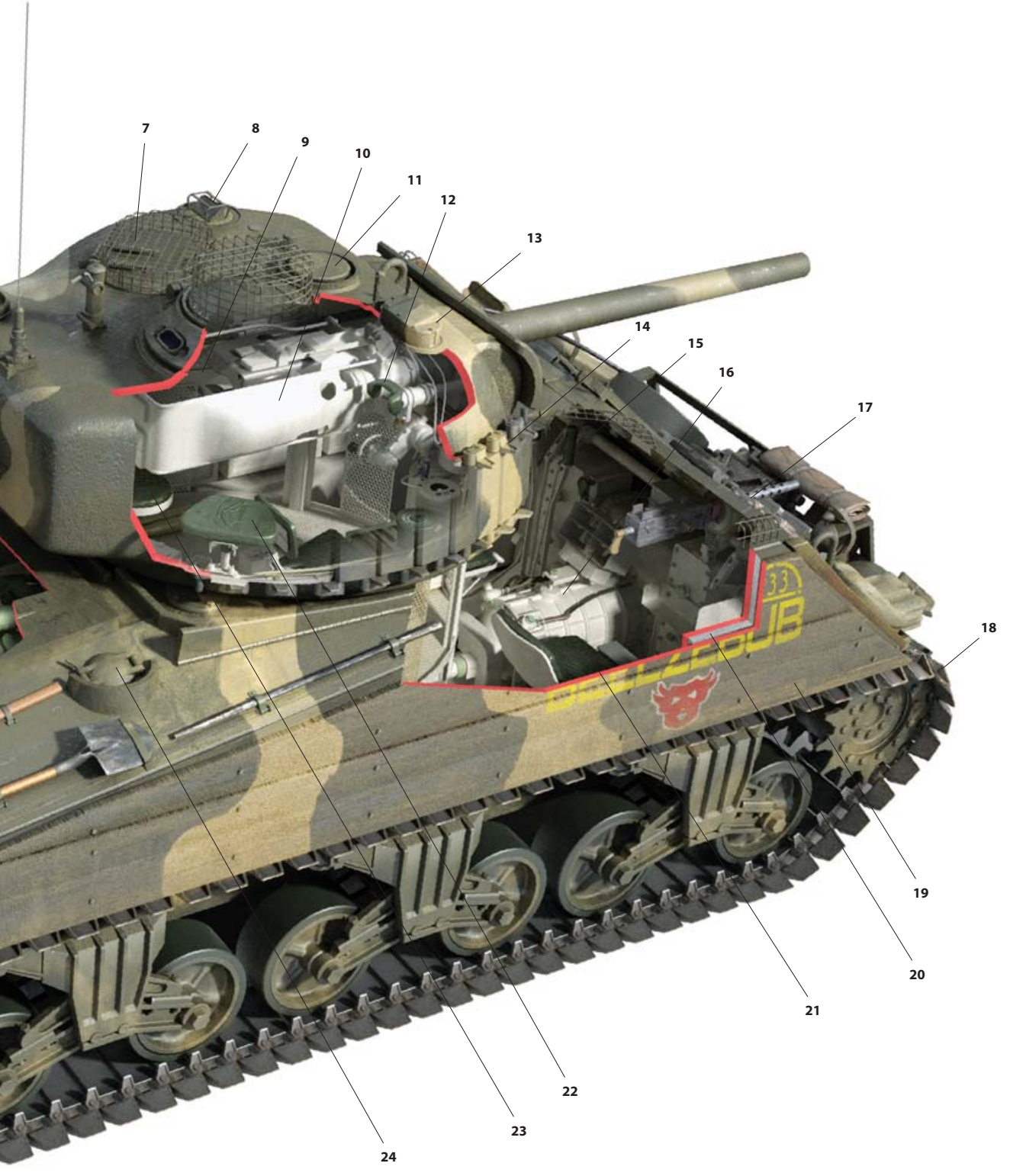

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flamethrower mounted on six converted LVT-4 amtracs, which had a 100-yard range and a much larger 200-gallon tank. Although these flamethrower amtracs proved useful, they were very lightly armored and not durable enough. The Marines concluded that a tank-mounted equivalent was still needed because of the better armor protection it offered.

There was still much fighting on Peleliu, as the Japanese infantry resisted with their usual steadfastness in spite of the hopeless odds. Of the 1st Tank Battalion's 31 officers, nine were killed and 13 wounded during the fighting; 45 of 46 M4A2 tanks were put out of action at one time or another but only nine were total losses. On a day-to-day basis, the battalion had about half of its tanks operational due to frequent battle damage and the drawbacks of operating tanks in difficult terrain with minimal technical support.

PREPARATIONS FOR ATTACKING THE INNER RING

Combat experiences in the Marianas and the Palaus led to a variety of local expedient improvements to Marine tanks prior to the assaults against the inner ring of Japanese defenses in 1945. Improved mechanized flamethrowers were high on the list of requirements due to the expectation that Japanese defenses would be focused on bunkers and fortified positions. The E4-5 auxiliary flamethrower was an adequate weapon, and each Marine tank battalion was allotted 24 of these, enabling more than half of the tanks in each battalion to be equipped with one. The Satan flamethrower tanks had proven to be a disappointment, in part because of the small size of the vehicle and the resultant shortcomings, but also due to the haste in the design in the spring of 1944. In the meantime, the Central Pacific Base Command had

M4A3 Comet (38) of C Co, 4th Tank Battalion seen near the landing beaches on Iwo Jima displays many of the modifications introduced by the battalion prior to the February 1945 landings. A special appliqué armor was added to the hull side consisting of an outer layer of wood to prevent the Japanese infantry from attaching magnetic antitank mines; supplemented with an inner layer of steel reinforcing mesh and concrete to offer added protection against the new Japanese 47mm antitank gun. "Birdcages" of steel reinforcing mesh have been added over the hatches and sandbags over the sponsons to defeat satchel charges. (NARA)

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One of the more curious contraptions used by the 4th Tank Battalion on Iwo Jima was this flail tank intended to sweep mines. It was designed by Gunnery Sergeant Sam Johnson of C Company based on photos of the British Crab flail tanks. The rig was mounted on a worn-out M4A2 tank named Joker that had served with the company on Kwajalein and Saipan and it is shown here during trials prior to the Iwo Jima landing. In the event, the device proved ineffective on Iwo Jima because the soft soil caused the tank to become bogged down. (NARA)

fostered the development of an improved derivative of the Canadian Ronson flamethrower, but in the M4 medium tank. This mounting was first demonstrated in October 1944 and was designated as the POA-CWS-H1 (Pacific Operations Area-Chemical Warfare Section-Hawaii-1). This flamethrower system had a 290-gallon fuel reserve and so had a 150-second firing time. It had an effective range of 80 yards with thickened fuel and 40 yards with liquid fuel. The first eight of these were issued to the Fleet Marine Force and were deployed with the Marine 4th and 5th Tank Battalions for the Iwo Jima operation. An entire US Army tank battalion, the 713th Provisional Flame Thrower Battalion, was equipped with 54 of these; although an Army unit, this battalion was deployed with the Fleet Marine Force in the summer of 1945 for operations on Okinawa.

The Marine tank battalions began a shift from the M4A2 to the M4A3 tank in 1945. This was a situation forced on the Marine Corps by the end of M4A2 (75mm) production in favor of the M4A2 (76mm), which the Marine Corps did not want. The Marine Corps had a preference for the M4A3 since its initial acquisition of medium tanks, and so preferred this option rather than the M4 with the Continental radial. Of the three battalions assigned to the Iwo Jima operation, the 3rd Tank Battalion kept the M4A2 while both the 4th and 5th Tank Battalions were reequipped with the M4A3. The Marine tankers seldom used Army designations to distinguish the medium tank variants, but instead called them "Fords" (M4A3) or "GMs" (M4A2) based on their engine; the British name "Sherman" for these tanks was not widely used during the war and did not become common American usage until after the war. A significant advantage of the new M4A3 tanks was that they introduced wet stowage that moved the main gun ammunition from the sponsons down into the bottom of the hull into lightly armored boxes, which reduced the likelihood of catastrophic ammunition fires. The new M4A3 also introduced the new all-vision cupola for the tank commander, which provided much better observation capability than the previous reliance on a single traversing periscope. This was a critical feature for the Marine tankers since they generally operated "buttoned-up" because

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Lt. Hank Bellmon's M4A3 tank Calcutta of C Company provides a good example of many of the 4th Tank Battalion modifications to improve tank-infantry cooperation. A field telephone is mounted in a sack attached to the left rear spare track rack, and a target clock painted nearby on the wading trunk to remind the Marine riflemen how to call out direction of targets. An old M3 light tank fuel tank has been converted into a water tank to provide the accompanying riflemen with drinking water, complete with piping and spigot. This view also shows how the wooden side armor has been spaced out and filled with concrete. (NARA)

of the constant threat of Japanese snipers.

Both the 4th and 5th Tank Battalions made extensive efforts to improve the protection of the tanks against the threat of magnetic mines and satchel charges. This had been pioneered by Bob Neiman's C Company, 4th Tank Battalion since the Kwajalein landings. The improvements were far from uniform because of the lack of material and the resultant need to improvise. In the 4th Tank Battalion, the use of wooden side armor was refined after Kwajalein and Saipan by spacing the planks about three to four inches from the sponson sides. On 13 tanks, this consisted of 3.5-inch lengths of steel reinforcing rod (rebar) welded vertically to the sponson sides at 6-inch intervals and then two layers of 1.5-inch steel reinforcing mesh welded along the entire side. This mesh was provided by Navy Seebees (CB: Construction Battalions) who used it for reinforcing concrete runways and for other construction applications. Once this inner core was completed, the 2 inch oak planking was attached to the sides, the gaps at the front and bottom filled in, and concrete then poured into the air space. This not only proved to be effective against magnetic mines, but also reduced the vulnerability of these tanks to side attack by the new Japanese 47mm antitank gun. An additional three tanks had a similar wood/concrete appliqué created using brackets and removable panels of plywood filled with concrete. However, there was not enough material to do this to all the battalion's tanks. Another 15 tanks had pieces of iron channel welded to the sponsons, and then 1.5-inch soft pine attached to the sides. Another nine tanks had brackets welded to the side to provide a 3-inch space, and then had either 1.7-inch pine (six tanks) or

E

1: M4A2 MEDIUM TANK, TANK COMPANY 4TH MARINES, GUAM, JULY 1944

By the time of the Guam landings in the Marianas in the summer of 1944, Company A, 3rd Tank Battalion which had been detached to serve as the Tank Company, 4th Marines, had switched to M4A2 medium tanks as seen here. They also decided to adopt a charging rhinoceros emblem as their insignia, probably influenced by the charging elephant insignia used on their parent 3rd Tank Battalion tanks.

2: M4A2 MEDIUM TANK, COMPANY B, 1ST TANK BATTALION, PELELIU, SEPTEMBER 1944

The 1st Tank Battalion was very simply marked during the Peleliu fighting, with a basic Company-Tank Number (B-5) marking painted on the four corner of the turret. By this stage of the war, the USMC usually painted over the US Army registration numbers on their tanks and used the USMC registration numbers seen here. The other markings include a maintenance marking indicating the type of radio fitted, and the lower number is probably a shipping code. This tank was unusual in that it had a Devil-dog insignia painted on the front of the hull side.

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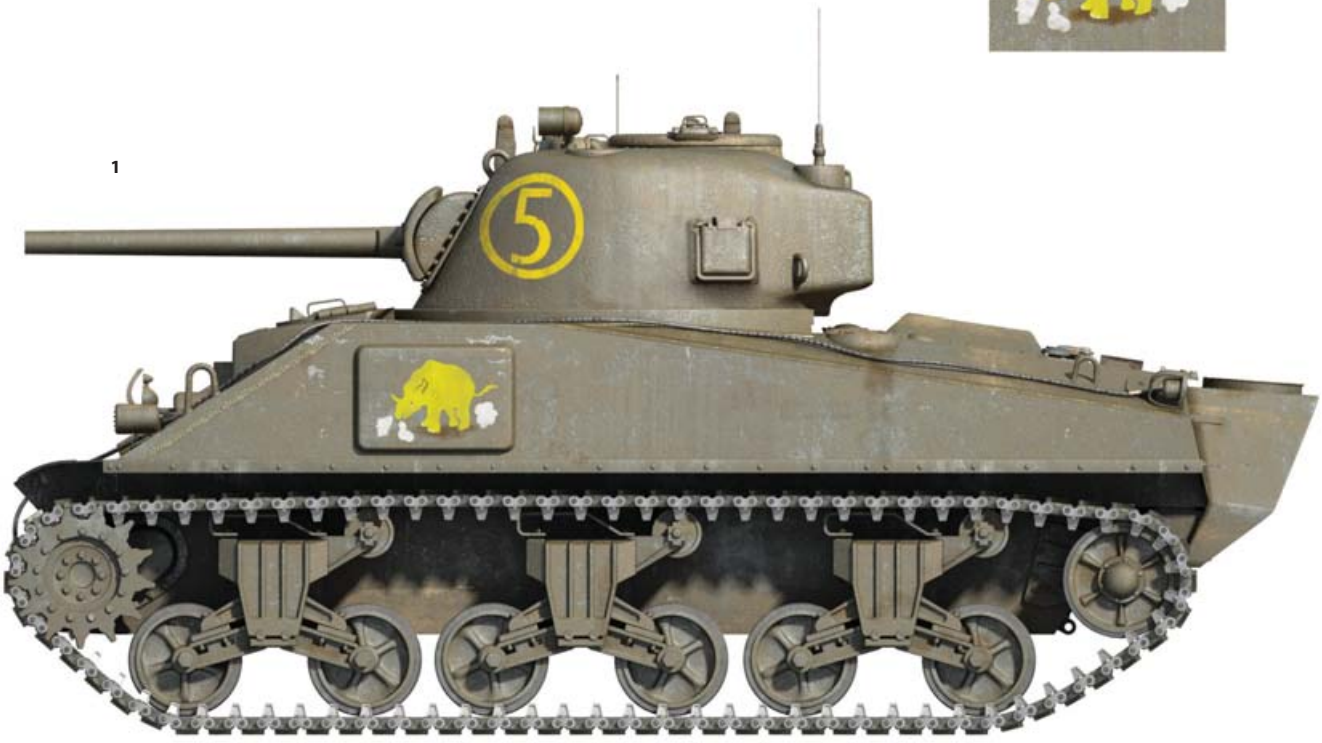

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Like the 4th Tank Battalion, the 5th Tank Battalion applied wooden side armor on the hull as an antidote to Japanese magnetic mines. The 5th Tank Battalion had its own distinctive features including the use of penny nails welded to the hatches to provide standoff protection against satchel charges, and planks over the suspension to prevent Japanese infantry from throwing satchel charges under the tank. This is a view of the M4A3 named Davy Jones rearming with 75mm ammunition during the fighting on Iwo Jima in February 1945. (NARA)

0.5-inch plywood (three tanks) attached. The 24 tanks fitted with the E4-5 flamethrower had an additional armor panel welded on the front of the right sponson to cover the location of one of the fuel reserves and a small box filled with sand to catch the "drool" from the flamethrower. Most tanks had steel track blocks welded to the hull front and turret sides for added protection, and 34 tanks had a spare road wheel and tow cable attached to the lower left corner of the hull. The threat of satchel charges hurled on the rear sponsons over the fuel tanks was addressed by covering these areas with sandbags. The sandbags offered enough distance that when a satchel charge exploded, the energy was dissipated enough to prevent the charge from damaging the fuel tank. There had been numerous attempts by Japanese infantry on Saipan and Guam to climb on the tanks and place satchel charges over the hatches. As an antidote to this tactic, the 4th Tank Battalion created "birdcages" made from the same steel reinforcing mesh that was welded above the hatches on all tanks.

The 4th Tank Battalion realized that tank-infantry cooperation was absolutely vital, so to assist the accompanying riflemen to communicate with the tank crew when buttoned up, a field telephone was added on the rear hull, wired into the tank's intercom system. This had been attempted before in the Marianas using spare .30-cal machine-gun ammo boxes, but the box lid tended to clip off the phone wire. As a result, the Iwo Jima configuration was either a canvas sack or a box without the lid. To remind the riflemen about the standardized method for pointing out targets, a target clock was painted on the tank near the telephone: 12 o'clock indicated a target straight ahead, 9 o'clock a target to the left, etc. To communicate with the Marine rifle company HQ, 27 tanks had an additional infantry SCR-300 radio fitted inside the turret since the existing tank radios communicated on different

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frequency bands. To help support the riflemen, 21 tanks were fitted with surplus external fuel drums from the M3A1 light tank for carrying drinking water, complete with piping and a spigot.

The 5th Tank Battalion attempted similar improvements, largely shaped by the types of material available. Wood panels were attached to brackets on the hull side, but the supplies were erratic and the battalion was forced to use corrugated sheet-metal roofing panels to make up the difference. Although the corrugated surface itself discouraged the attachment of magnetic mines, the metal panels were painted, and while the paint was still wet, the surface was sprayed with sand. The battalion's approach to protecting the hatches was to weld penny nails to the hatches and other surfaces at 2-inch intervals. Some tanks had a birdcage over the drivers' hatches, created using wire netting over a frame made from steel rebar. To frustrate attempts by Japanese infantry to hurl satchel charges under the tank, a protective skirt of wood planks was attached over the suspension bogies. Like the 4th Tank Battalion, the 5th Tank Battalion also made use of sandbags over the rear sponsons and also attached field telephones for communicating with accompanying Marine riflemen.

The 3rd Tank Battalion was the only battalion not to undertake extensive modifications to their tanks. This battalion was still equipped with older M4A2 tanks that did not have factory-applied appliqué armor over the three sponson ammo bins. As a result, the battalion had improvised steel panels welded in place.

OPERATION *DETACHMENT*: IWO JIMA

Like Tarawa, Iwo Jima would go down in Marine legend as one of their most bitter battles of the Pacific War. Iwo Jima was Tarawa writ large, a sulphuric volcanic island laced with natural caves and extensive Japanese fortifications. As at Peleliu, Japanese tactical doctrine was moving away from an intense defense of the immediate beachhead and towards a protracted battle of attrition away from the shoreline. The Japanese were adapting to the growing importance of Marine tanks. Iwo Jima saw the first widespread use of the Type 3 antitank mine which used a ceramic casing instead of the usual steel to make it difficult to detect using conventional magnetic mine detectors. The Iwo Jima garrison included five entire antitank gun battalions and large numbers of field guns and

The M4A3 tank named Co-Ed (40) of C Company, 4th Tank Battalion was one of four tanks in the battalion equipped with the POA-CWS-H1 flamethrower mounted in place of the main gun. This was by far the most successful of the flamethrowers adopted by the Marine Corps during the Pacific fighting and was in great demand when Japanese bunkers were encountered. (NARA)

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A pair of M4A3s of C Company, 4th Tank Battalion disabled during the fighting for Airfield #2. These have the distinctive pattern of spare tracks fitted as improvised armor on the glacis plate as well birdcages over the hatches to mitigate the effects of Japanese satchel charge attacks. The vehicle in the background to the right has an added SCR-300 infantry radio as is evident from the second radio aerial. (NARA)

antiaircraft guns used in an antitank role. The Japanese defenses were based around tunnels and fortifications. Japanese antitank tactics continued to improve and stressed the use of specially trained antitank squads using satchel charges and other improvised antitank weapons along with smoke grenades which hindered the view of tank crews. Iwo Jima had a large airfield, and with the aircraft largely destroyed, many aircraft bombs and torpedo warheads were deployed along important routes as huge, improvised mines. The only Japanese armor on the island was the understrength 26th Tank Regiment which had lost its original complement of tanks at sea when their transport was torpedoed. These were replaced with 22 new tanks, mostly the Type 97-kai Shinhoto

F

1: M4A2 MEDIUM TANK, COMPANY A, 3RD TANK BATTALION, IWO JIMA, FEBRUARY 1945

The 3rd Tank Battalion inherited some of the tanks of the IMAC Tank Battalion, and so sometimes carried their charging elephant insignia during 1944. However, this disappeared on most of its M4A2 tanks when they had field-fit appliqué armor added to the hull sides of their M4A2 tanks prior to Iwo Jima to protect the sponson ammo bins. The basic colors of the M4A2 at this time were overall olive drab with irregular patches of black camouflage, but the new appliqué armor was painted in available dull green paint as were splotches elsewhere on the tank for repair and maintenance when olive drab was not available. The battalion had adopted a white winged star insignia in 1944, which appeared on the hull side, turret rear, and turret roof. However, the hull-side insignia often fell victim to the appliqué armor refit. Other markings evident are the USMC registration number, the tank name (Apache), and the tank number on the turret side. This battalion used both white and yellow paint for these markings, depending on what was available.

2: M4A3 MEDIUM TANK, COMPANY A, 4TH TANK BATTALION, IWO JIMA, FEBRUARY 1945

The 4th Tank Battalion had an energetic program to upgrade their tanks with appliqué armor and other improvements prior to the Iwo Jima landings, based on their combat experiences in the Marianas. Both the precise layout of the armor appliqué as well as the subsequent camouflage and markings varied between the three companies. Company A had the most elaborate camouflage consisting of splotches of sand, black, olive drab, and dull green on the wooden side armor, which sometimes extended to the turret as well. Markings were basic and consisted of the tank name starting in the company letter (Ait-Ball), the tank number and the UNIS symbol (132). Company B also used elaborate pattern-painted camouflage on the new wooden appliqué hull armor, but in different colors and patterns as can be seen here on Plate D. In contrast, Company C was very plain with the new armor being overpainted in olive drab or dull green depending on what paint was available.

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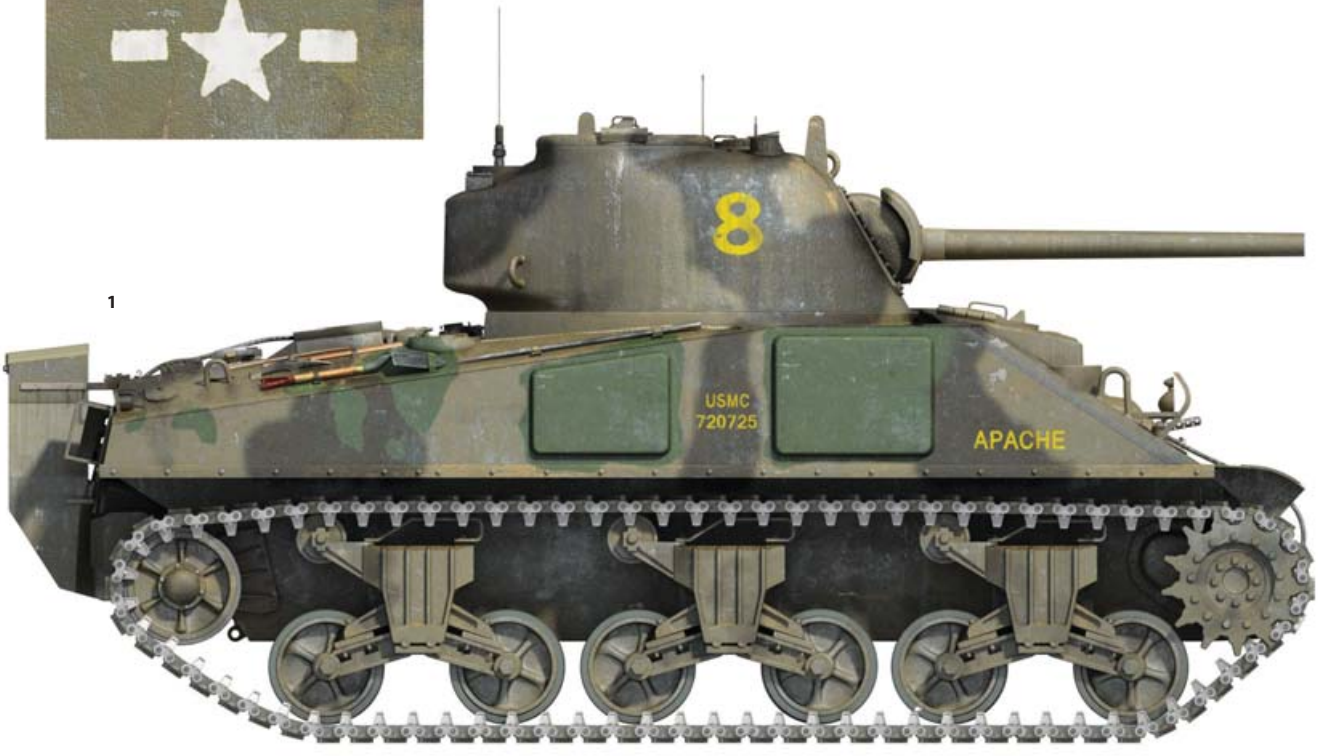

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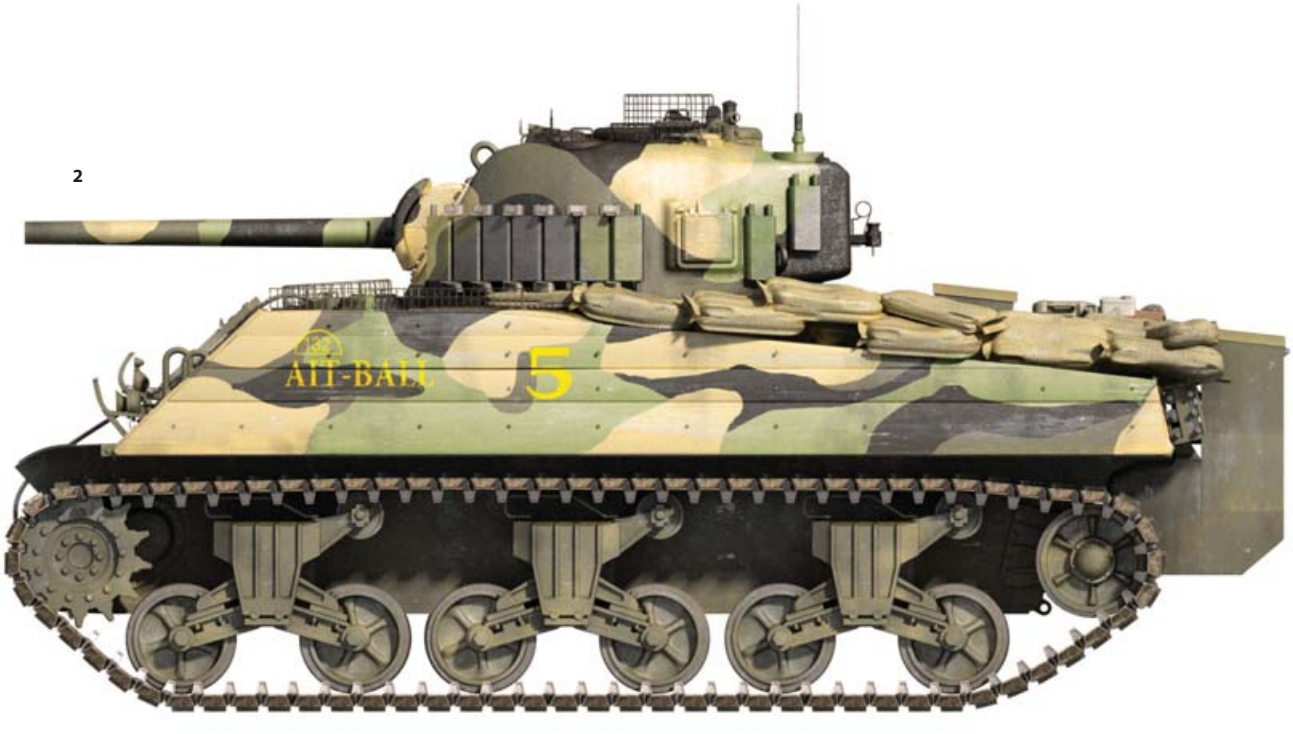

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A column of M4A2 tanks of the 3rd Tank Battalion drive towards Airfield # 2 on Iwo Jima on February 24, 1945. This was the only battalion on Iwo Jima to retain the older M4A2 medium tank and they had few of the upgrades seen on the 4th and 5th Tank Battalion tanks. They are painted with the battalion's typical "winged star" insignia. (NARA)

Chi-ha. The regimental commander, Lt. Col. Nishi, hoped to use his tanks as a roving fire brigade, but he was ordered to deploy them as entrenched pillboxes.

Iwo Jima saw the largest commitment of Marine tanks to date, three entire battalions. The tanks were landed at the outset of the campaign starting on February 19, 1945 and played an important role through the entire battle, providing fire support against Japanese infantry attack, and proving a critical ingredient in defeating Japanese bunkers. By now, standard tactics had been developed to attack the well-fortified Japanese bunkers, called "corkscrew and blowtorch" tactics. The bunkers were suppressed with tank fire and satchel charges, and then burned out with flamethrowers. The amount of flamethrowing conducted by the tanks was evident from the volume of fuel expended; on one day alone the 5th Tank Battalion used up 5,200 gallons for its four flame-tanks. The POA-CWS-H1 flame-tanks proved to be far more effective than the more numerous tanks with the auxiliary E4-5 flamethrower. Dozer tanks also were highly prized because of their versatility in clearing roads and attacking bunkers by covering openings.

The soft volcanic pumice of Iwo Jima was a major hindrance to tank operations, and it was the single greatest cause of tank casualties since tanks often became bogged down or snapped their tracks. The main enemy threat to Marine tanks on Iwo Jima were mines. Mines were used in large numbers throughout the campaign, and they were amplified by the soil conditions. Even the smaller mines could snap a track, and when the crew attempted to repair the track, they were often wounded or killed by small arms, mortar or artillery fire. Far more crewmen were injured in combat from small arms or other fire while outside the tank than from direct fire weapons while inside the tank. Close cooperation between tanks and infantry and the relatively open nature of the terrain limited the Japanese from using their normal close attack tactics against tanks.

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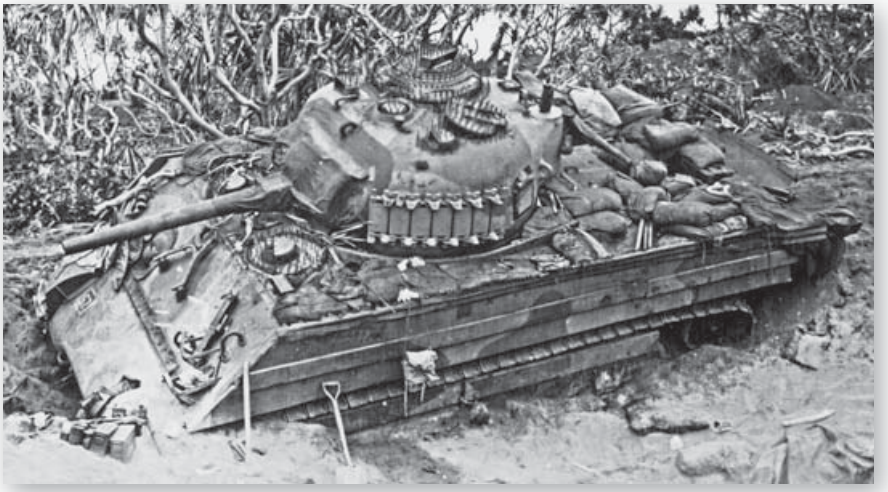

An M4A3 of the 5th Tank Battalion disabled after an artillery round struck near the rear and damaged the engine radiator. This provides a good illustration of the improvements added to the 5th Tank Battalion tanks prior to the Iwo Jima landings including the distinctive penny nails around the turret hatches and the wooden side armor on both the hull and over the suspension. (NARA)

The 5th Tank Battalion was used in the initial assault on Mount Surabachi while the 4th Tank Battalion took part in initial attacks towards the critical airfields. On D+5, an effort was made to group all three Marine tank battalions to seize Airfield #2, but the attack was frustrated by an especially heavy concentration of mines and antitank guns and the objective was not taken until D+7. The extensive Japanese use of tactics based on underground fortifications and extensive minefields, along with unusually heavy artillery and mortar support forced the Marines to improvise new tank-infantry tactics on the spot. The 4th Tank Battalion after-action report concluded, "Due to the rugged terrain encountered on Iwo, orthodox infantry-tank tactics had to be abandoned. Tank tactics were improvised and in many cases, basic principles of employment were disregarded. This was never done because of ignorance of fundamentals; it was done because the tactical situation warranted certain calculated risks. Tank units were eager to support the infantry, and they did everything physically and mechanically possible to furnish that support. If it is certain that tank support of infantry and vice versa was less on Iwo than in previous operations, it is equally certain that the terrain encountered made this a foregone conclusion."

Marine tank losses in the fighting were very high. On D+3, 4th Tank Battalion had 28 and 5th Tank Battalion had 34 tanks in action, about three-quarters their starting strength. By the end of the first week of fighting, the tank battalions had a hard time keeping their companies at half strength due to the large numbers of tanks disabled and under repair for battle damage. For example, Co C, 5th Tank Battalion started with 14 tanks and required 120 tank repairs of which 29 were the result of mines. At various points in time, 13 of the company's 14 tanks were abandoned due to battle damage but of these all but five were eventually recovered and put back into action. Of the five total losses, four were due to mines. The 3rd Tank Battalion had 15 of its 49 tanks written off as total losses, although many more were temporarily out of action during the course of the fighting due to battle damage. Casualties in the tank battalions, while not as high as in the Marine rifle companies, were higher on Iwo Jima than in any previous campaign. For example, 4th Tank Battalion suffered 122 casualties including 24 killed, roughly one in five men.

The Marine tanks at Iwo Jima were "the most effective supporting weapon in this action" according the 9th Marine after-action report. This

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Earbanger, an M4A3 of the 5th Tank Battalion seen here on February 26, shows how vulnerable the Marine tanks were to artillery fire in spite of all the precautionary modifications. Its side appliqué armor has been reduced to wooden splinters and the suspension planks completely blown off.

was certainly the viewpoint of the Japanese Army as well, which came to believe that it was essential to defeat American tanks in order to prevail in combat with US forces.

OPERATION *ICEBERG*: OKINAWA

The largest combined Army-Marine amphibious operation of the war took place at Okinawa in April 1945 on the heels of the Iwo Jima campaign. The Okinawa fighting was the first battle on Japanese soil, and the first involving a significant Japanese civilian population. It was a brutal foretaste of the expected invasion of the Home Islands. After the fruitless expenditure of the 2nd Armored Division in the Philippines in January–February 1945, the Japanese Army decided to hold its best armor for the defense of the Home Islands. The only major Japanese tank unit on Okinawa was the understrength 27th Tank Regiment, with only 13 Ha-gos and 14 Shinhoto Chi-has. The success of US tanks in the Marianas, on the Philippines, and on Iwo Jima led to the decision to commit the heaviest US armor force ever, totaling eight Army, two Marine tank battalions, and two Marine independent tank companies, totaling over 800 tanks. In addition there were hundreds of Marine amphibious tanks, Army SP guns, half-tracks and other AFVs.

The Marine tank units on Okinawa were the veteran 1st Tank Battalion, and the new and untested 6th Tank Battalion. One of the innovations during the landing phase was the use of the T6 pontoon device to land one company from each of the two Marine tank battalions. This experiment proved pointless as the landings were uncontested. The 1st Tank Battalion still retained the M4A2 tanks while the 6th Tank Battalion used the newer M4A3. Neither battalion had made extensive modification of their tanks prior to the landings beyond some use of spare track blocks for added protection. The battalion commanders recommended to the III Amphibious Corps that the tanks be employed in a somewhat different fashion than in previous campaigns, with the battalion retained intact by the division rather than being broken up into separate companies and doled out to the regiments. The aim was to concentrate the battalions for specific missions.

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The 1st Tank Battalion by this stage of the war had developed a set of battle-tested tank-infantry tactics. This involved a close coordination of tanks and infantry to shield the tanks from Japanese infantry close attack, while the tanks provided the protection and firepower necessary to penetrate Japanese defensive positions and reduce them through a systematic use of gunfire and flamethrower attack. The 1st Tank Battalion after-action report summarized their tactics:

> Tanks fought at all times as infantry tanks and functioned as a major direct fire close-support weapon. At no time did tanks operate beyond the observation and cover of the infantry. Terrain and density as well as the type of enemy underground defenses precluded successful panzer attack and none was attempted by this battalion. Such tactics at times attempted by the Tenth Army tank units met with disaster in each case... A highly effective, battle-proven Tank-Infantry SOP (standard operating procedure) had been used in training and numerous refinements in the technique of employment had been developed to a high degree prior to this operation. Of particular importance and inestimable value was the prior establishment between infantry and tank units of mutual trust and pride in each other and a realization of the power of the combined team.

Tanks from C Company, 6th Tank Battalion prepare for an assault on the Japanese stronghold along the Mezado Ridge on Okinawa on June 17, 1945. The tanks have been fitted with logs on the glacis plate to drop into craters that were obstructing the advance. The lead tank appears to be an early production M4A3 with low bustle turret and early hull with small driver hatches that has been upgraded with newer features include the M34A1 gun mount and the all-vision commander's cupola. (NARA)

The 1st Marine Division tactics distinguished between enemy positions that were lightly defended and those that were protected by underground fortifications. In the former case, the area was pounded by supporting arms including artillery, artillery rockets, and direct tank fire, and then the ground seized by the infantry. In the event that the objective was heavily protected by underground bunkers, caves and other fortifications, the target was

A 6th Tank Battalion M4A3 tank on the right has struck a mine while the tank on the left waits and provides cover. Both of these tanks were from the test platoon of A Company which had their tanks fitted with the T6 floatation device to convert them into amphibious tanks for the Okinawa landings. Although the pontoons for these devices were long since removed, the distinctive traces of the fittings including the mounting lugs and the waterproofing collars around the gun mounts are still evident. The damaged tank to the right has an additional SCR-300 infantry radio fitted in the right hull sponson as can be seen from the second radio antenna. (NARA)

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An M4A3 of the 6th Tank Battalion sits near a Japanese aircraft hanger while the ground nearby is littered with spent shell casings from a recent indirect fire support mission. This provides a good view of some of the local improvisations on Okinawa including the extensive use of spare track blocks as appliqué armor and the attachment of wood slats along the suspension to discourage Japanese anti tank teams from throwing satchel charges under the tank. (NARA)

processed in a systematic fashion using tanks protected by riflemen. The tanks began by suppressing enemy fire with direct tank fire and then cracking open the fortified defenses with tank fire before attack by flamethrower tanks. The aim was to clear an area about 500 yards deep before proceeding on to the next zone where the process was repeated. The Marines felt that this approach, while slow, offered the prospect for steady advance through the Japanese defenses, even against the thickest Japanese defenses such as the Shuri line.

The Japanese defenders agreed. Following his capture, the commander of the Japanese 22nd Separate Automatic Gun Battalion, a corps-level 47mm antitank gun unit, remarked that

> the tank-infantry team on this operation was so successful that he did not see how any defense line, however protected, could not be penetrated... He was astounded with the volume of fire laid down by the tanks and the speed with which the American tank can traverse and bring fire to bear upon Japanese antitank guns after the antitank gun opens fire.

The combined tank-infantry tactics helped reduce Marine tank casualties, and the 1st Tank Battalion took pride in the fact that not a single tank was lost to Japanese close infantry attack, in contrast to the inexperienced US Army tank battalions in neighboring sectors, which took heavy losses to these tactics. Instead, the main threat came from mines and antitank guns. Marine tanks began to sprout more and more spare track blocks on their hull and turrets as a means to ward off the 47mm antitank gun fire. In addition, some companies began to attach wooden frames over the suspension bogies as had been done on the 5th Tank Battalion tanks on Iwo Jima due to the frequent Japanese practice of throwing satchel charges under the tanks.

Neither of the Marine tank battalions had any of the POA-CWS-H1 main gun flamethrowers, though both battalions had the smaller and less effective

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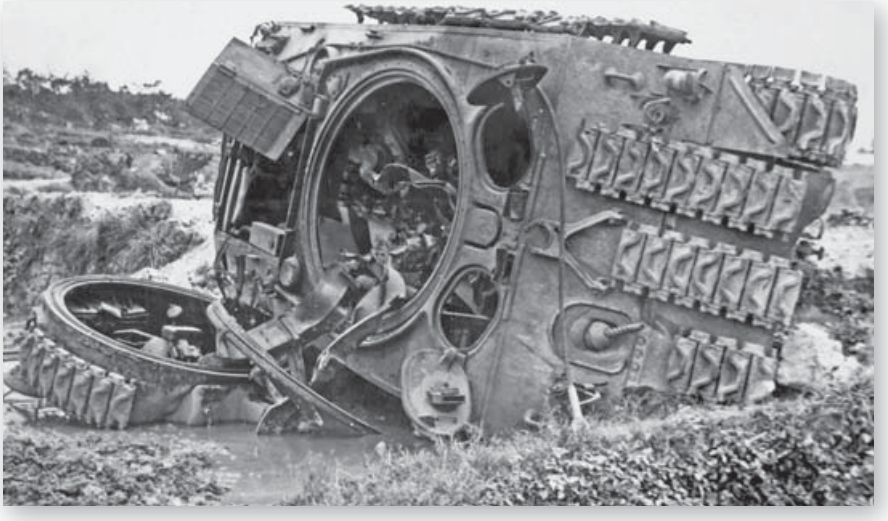

LEFT
The large numbers of Japanese 47mm antitank guns as well as entrenched field guns encouraged the Marines to weld spare metal track links to the hulls and turrets of their tanks as a form of improvised armor. Here, a welder adds tracks to an M4A2 of the 1st Tank Battalion. These tracks are fitted with duck-bill extended end connectors for better floatation in soft and muddy field conditions. (NARA)

BELOW LEFT
Mines, sometimes improvised devices based on large aircraft bombs or torpedo warheads, were a special hazard to tanks when operating on predictable routes such as roads. This M4A3 of the 6th Tank Battalion was destroyed on a road south of Itoman on June 16, 1945. It has the usual profusion of spare track blocks welded to the hull and turret as proof against the 47mm antitank gun.

E4-5 auxiliary flamethrowers. Instead, the Army's 713th Flamethrower Tank Battalion had been assigned to the Okinawa campaign, and its B Company was attached to the Marine 1st Tank Battalion with one platoon sometimes broken off to assist the 6th Tank Battalion.

Some idea of the ferocity of the fighting can be appreciated by the scale of tank casualties. The 1st Tank Battalion started the campaign with 47 M4A2 tanks on May 1. During the course of the fighting, operational strength plummeted from 47 tanks on May 1 to 28 tanks on June 22. The heaviest casualties were during the fighting for Kunishi Ridge in mid-June, with the heaviest single day's casualties being 21 tanks. In total, tanks suffered combat damage sufficient to take the tank off the line 163 times, or, in other words, each tank was knocked out an average of four times. Total losses were 28 of the original 47 tanks and a total of 38 replacement tanks (21 M4A2

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Japanese antitank teams frequently tried to disable Marine tanks by throwing satchel charges under the hull. This led to Marine improvisations late in the Okinawa campaign as seen here with skirts of scrap material attached over the tank suspension to frustrate the Japanese tactics. (NARA)

and 17 M4A3) were received. In total, the Marine and Army tank battalions suffered 153 total losses on Okinawa, of which 51 were Marine tanks. Besides being reinforced with replacement tanks, the battalion drew on the support from A Company, 2nd Tank Battalion which arrived on the scene when the 8th Marines were sent into the lines for reinforcement.

Gen. Shepherd of the 6th Marine Division later commented that "if any one supporting arm can be singled out as having contributed more than any other during the progress of the campaign, the tank would certainly have to be selected."

G

1: M4A3, 5TH TANK BATTALION, IWO JIMA, FEBRUARY 1943

The 5th Tank Battalion had its own style of appliqué armor for Iwo Jima. Instead of the birdcages over the hatches as seen on the 4th Tank Battalion, the 5th Tank Battalion welded penny nails to vulnerable roof areas. Another difference was the use of wooden skirts over the suspension to deflect satchel charges which Japanese infantrymen frequently tried to throw under the tanks. The 5th Tank Battalion tended to use a simpler scheme of golden brown, possible US Army Earth Yellow paint, over the usual olive drab or dull dark-green paint. This battalion did not widely use the UNIS system on its tanks on Iwo Jima, but many carried a two-digit number inside a square on the upper-right corner of the front differential housing, on the side, and sometimes on the turret and rear plate. On this tank, the side marking (52 in a square) has been overpainted, but it was carried on the differential housing in front as can be seen on the photo of this tank in this book.

2: M4A3 MEDIUM TANK, 6TH TANK BATTALION, OKINAWA, JUNE 1945

The 6th Tank Battalion started the Okinawa campaign with some of its tanks finished in overall olive drab, sometimes with sprayed patterns of black. As the campaign wore on, additional spare track was welded to the hull and turret for added protection. The battalion had an elaborate markings scheme. Platoons were identified by geometric shapes: square (1st), circle (2nd), diamond (3rd), and triangle (4th); headquarter elements had their own symbols including a heart for the battalion HQ company, and a shamrock for the company HQ. Each company was assigned a color for these markings: red (Company A), white (Company B), and yellow (Company C). It's worth mentioning that Company A found that the red paint was too dark to be visible on the olive drab finish and so white was mixed in to give a pinker shade for their markings. These markings were usually painted on either side of the turret and the turret rear as well as on one of the corners of the hull front.

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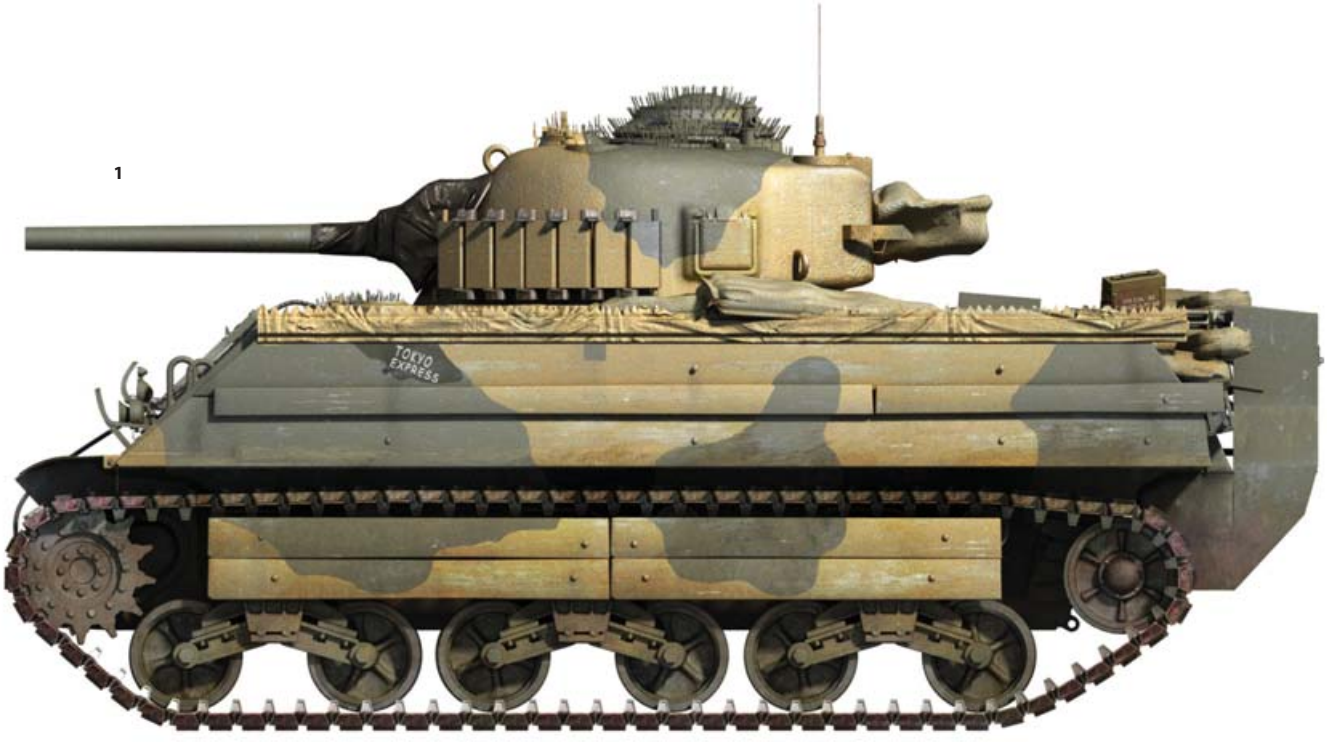

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Marine Tank Combat Actions 1942–1945		
Campaign	**Date**	**Marine Tank Units**
Guadalcanal	August 1942	1st Tank Battalion
New Georgia (Munda)	July–August 1943	9th, 10th, 11th Defense Battalions
Bougainville	October 1943	3rd Tank Battalion
Tarawa	November 1943	IMAC Tank Battalion
Bismarck archipelago (New Britain, Emirau)	December 1943	1st Tank Battalion
Kwajalein (Roi-Namur)	January 1944	4th Tank Battalion (-)
Engebi, Eniwetok, Parry Island	February 1944	2nd Separate Tank Company
Saipan	June 1944	2nd (-) and 4th Tank Battalions
Tinian	July 1944	2nd, 4th Tank Battalions
Guam	July 1944	3rd Tank Battalion, 4th and 22nd Marines Tank Companies
Peleliu	September 1944	1st Tank Battalion
Iwo Jima	February 1945	3rd, 4th, 5th Tank Battalions
Okinawa	May–June 1945	1st, 2nd (-), 6th Tank Battalions, 2nd Sep. Tank Company

FURTHER READING

While there is not a great deal in print about Marine tanks in World War II, what is available is of excellent quality. Two books merit special note. Ken Estes' account provides an essential backbone to an understanding of Marine Corps tank doctrine and tank acquisition. Ed Gilbert has provided a complementary account by focusing on the Marine tank combat in World War II from the perspective of the tankers. While it is outside the scope of this short book, readers interested in US Army tank operations in the Pacific can find a companion to the Gilbert book with Salecker's fine study of Army tank operations. Ken Estes has also edited the reminiscences of one of the key Marine tankers of World War II, Bob Neiman, who saw combat in many of the main campaigns of the war and served with the Marine tank force almost from its outset. David Harper's short monograph provides a detailed photographic study of Marine tank operations in the largest single Marine tank battle of the war on Iwo Jima.

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At the conclusion of the war, the 1st Marine Division was dispatched to North China to repatriate Japanese forces. This is a parade in Tientsin by M4A2 tanks of the 1st Tank Battalion which remained in China until 1947 when it returned to Guam. (NARA)

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